DOCUMENT RESUME

ED 217 207 CE 032 793

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TITLE Study of New Youth Initiatives in Apprenticeship. Report on Impacts.
INSTITUTION CSR, Inc., Washington, D.C.
SPONS AGENCY Employment and Training Administration (DOL), Washington, D.C.
PUB DATE Aug 81
CONTRACT DOL-99-9-2224-33-57
NOTE 250p.; For related documents see CE 032 791-795.
AVAILABLE FROM CSR, Inc., Suite 500, 805 15th St., N.W., Washington, DC 20005 ($15.65).

EDRS PRICE MF01/PC10 Plus Postage.
DESCRIPTORS Adoption (Ideas); *Apprenticeships; Career Education; Demonstration Programs; Educational Research; *Education Work Relationship; Employer Attitudes; Employers; *Employment Patterns; High School Graduates; High Schools; Interviews; *Job Performance; Job Satisfaction; Labor Turnover; *Participant Satisfaction; Persistence; Program Effectiveness; School Business Relationship; Student Attitudes; Vocational Education
IDENTIFIERS Impact; *Impact Studies; New Youth Initiatives in Apprenticeship Study; *Youth Apprenticeship Projects

ABSTRACT

A study examined the impacts of the Youth Apprenticeship Projects (YAPs) upon student apprentices and employers. Post-high school interviews were conducted with 845 student apprentices from 1978-80, 621 students in a control group, and 347 employers. Interview response rate for all students averaged 76%, for employers--92%. Students who participated in the YAPs reported higher levels of job satisfaction and tended to be more occupationally stable than comparison students. They did not earn significantly higher wages. Those student aprentices who stayed with their apprenticeships after high school tended to be better job performers. Student apprentices reported very high levels of satisfaction and strongly endorsed the project. They did not exhibit different or fewer school-to-work transition problems. The organizations that employed student apprentices were very small businesses with neither union representation nor prior experience with apprenticeship. Employers were attracted more by emphasis on screening and training of entry-level workers than by stipends offered and were very satisfied with the projects. Employers with prior apprenticeship experience were more likely to consider apprenticeship permanent and provide related instruction for graduate apprentices. (YLB)

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REPORT ON IMPACTS

STUDY OF NEW YOUTH INITIATIVES IN APPRENTICESHIP

Contract No. 99-9-2224-33-57

August, 1981

Prepared for

Employment and Training Administration
U. S. Department of Labor
Washington, D. C.

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This report was prepared under a contract with the Office of Youth Programs of the Employment and Training Administration, U. S. Department of Labor. Organizations undertaking such projects under government sponsorship are encouraged to state their findings and express their judgments freely. Therefore, points of view or opinions stated do not necessarily represent the official position of the Department of Labor.

CE032793

ACKNOWLEDGMENTS

The authors of this report appreciate the valuable contributions made to this study by many individuals within the Department of Labor. First, we wish to thank the Project Officers, Herman Scott, Brian Linder, and Ray Palmer from the Office of Youth Programs, for their effective and considerate monitoring of the research effort. Similarly, Don Roffle of the Office of Research and Development provided helpful guidance and support throughout the study. In addition, Frances Wattenberg from the Office of Policy, Evaluation and Research was particularly helpful in the OMB clearance process.

Outside of the Department of Labor, other individuals also provided valuable assistance. Betty Bailey and Charles W. Moore from Howard University did an outstanding job in preparing the data for computer analysis and in conducting all of the statistical analyses. James M. Richards, Jr. and William Peters, consultants to CSR, Incorporated, provided technical assistance on sampling and statistical analyses. John P. Walsh and Lowell Burkett provided substantive and helpful comments on training and vocational education issues involving youth.

The extensive field work and data collection could not have been accomplished without the cooperation of the many employers, student apprentices, and comparison students who consented to be interviewed. Also, the field work was greatly enhanced by Project Directors and staffs at the Youth Apprenticeship Projects who provided valuable assistance throughout the study.

Finally, the authors are very grateful to the word processing staff at CSR, Incorporated for their dedicated efforts in producing the many drafts and the final copy of this report.

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EXECUTIVE SUMMARY

This study examines the impacts of the U. S. Department of Labor (USDOL) demonstration of apprenticeship-school linkages on participating youth and employers. Four projects were funded by the Bureau of Apprenticeship and Training (BAT) in 1977 under the New Initiatives in Apprenticeship Program. In 1978, four more projects were initiated by the Office of Youth Programs (OYP), which also provided subsequent funding for all the operating projects. The projects--referred to as Youth Apprenticeship Projects (YAPs)--implement linkages with local school systems, develop apprenticeship job slots with employers, and coordinate registration activities with BAT and/or State Apprenticeship Councils (SACs). At all but one demonstration site, training stipends were offered to employers as an inducement to project participation.

The major goals of the Youth Apprenticeship Projects are:

- To demonstrate the feasibility of in-school apprenticeship;
- To promote the use of registered apprenticeship by employers as a system of training in the skilled trades; and
- To ease the school-to-work transition of youth.

As part of USDOL's effort to bridge the gap between apprenticeship and secondary education, especially vocational education, Youth Apprenticeship Projects place high school seniors in part-time apprenticeship positions during school with the expectation that they will continue with the same job after high school graduation.

The purpose of this study was to examine the impacts of the Youth Apprenticeship Projects upon student apprentices and employers. For student apprentices, impacts were examined in the following areas:

- Post-high school employment patterns;
- Occupational stability, i.e., the extent to which students continue to be employed in occupations for which they trained in high school;
- Job satisfaction for current or most recent employment;
- School-to-work transition problems;
- Retention in apprenticeship following graduation from high school; and
- Assessments of the influence of program participation on career objectives and school-to-work transitions.

For employers who participated in the Youth Apprenticeship Projects, impacts were assessed in the following areas:

- Adoption of apprenticeship as a system of training;
- Retention of student apprentices as full-time apprentices after high school;
- Assessment of the job performance of the student apprentices; and
- Evaluation of the program in terms of assisting students in the school-to-work transition.

The methods used to examine impacts in these areas involved post-high school interviews with a random sample of former student apprentices from the class years of 1978, 1979, and 1980. Eight hundred and forty-five student apprentices were sampled from the 2,051 student apprentices who had been registered since 1977. A constructed control group of 621 students matched on high school attended, sex, race, year of graduation, and vocational curriculum was sampled to permit comparisons of education and post-high school employment experiences for 1979 and 1980 graduates. To examine employer impacts, a sample from the 1,177 employers and work supervisors of the student apprentices was selected for interview. The employer sample of 347 employers was linked with the apprentice sample to permit job performance evaluations on sampled student apprentices.

Interview response rates for student apprentices and the constructed control group averaged 76 percent; the response rate for employers averaged 92 percent. The data obtained from the student apprentice, comparison, and employer interviews were analyzed with both univariate and multivariate techniques. For the student apprentices, the results indicated that:

- Students who participated in the YAPs reported higher levels of job satisfaction in their current or most recent employment than comparison students;
- Student participants in the YAPs tended to be more occupationally stable than comparison students;
- Students who participated in the YAPs did not, as a group, earn significantly higher wages in their post-high school jobs than comparison students;
- Those student apprentices who stayed with their apprenticeships after high school tended to be better job performers;
- Students who participated in the YAPs reported very high levels of satisfaction and strongly endorsed the project; and
- Student participants in the YAPs did not, as a group, exhibit different or fewer school-to-work transition problems than comparison students.

Job satisfaction tended to be higher for program participants even if the students did not remain in their apprenticeships. The stability measure, i.e., the tendency toward continued employment in the occupation trained for in high school, has important implications both for students and the school systems. The difference between the participants and the constructed control group in terms of average post-high school wages was not statistically significant; however, the earnings of the participant group were somewhat higher than those of the constructed control group. Also, there did not appear to be differences in the school-to-work transition problems of participants and controls. However, fewer of the student apprentices reported looking for

another job after high school graduation. Student apprentices reported very high levels of satisfaction with the experience whether or not they remained in their apprenticeship positions. Finally, those participants who remained as full-time apprentices after high school were significantly better job performers as evaluated by work supervisors.

For the employers the study results suggest that:

- The organizations which employed student apprentices generally were very small businesses which did not have union representation of their workforce and did not have prior experience with apprenticeship;
- Employers who cooperated with YAPs were attracted more by the program's emphasis upon screening and training of entry level workers than they were by the stipends offered;
- Employers who cooperated with YAPs were very satisfied with the projects;
- The single most important factor in generating positive outcomes with employers was the number of years that the YAPs had been in operation;
- The stipends provided to employers by the YAPs did not generate positive outcomes commensurate with their cost;
- Employers with prior apprenticeship experience were more likely to consider apprenticeship permanent and to provide related instruction for graduate apprentices;
- For employers without prior apprenticeship experience, it may be inferred that YAP participation reduced the influence of negative stereotypes concerning young workers; and
- The YAPs have contributed to the expansion of apprenticeship both in terms of program and apprentice registrations.

Student apprentice placements in the projects indicate that very small businesses were the major employer participants in the demonstration. The majority of employers had not had experience with registered apprenticeship and they were attracted more by the screening and previous training of the youth than they were by the stipends. The employers, as a group, were very

satisfied with the YAPs and about 70 percent considered apprenticeship to be a permanent part of their training for entry level workers. The fact that most of the employers had not used registered apprenticeship previously suggests that the demonstrations have served to expand apprenticeship as a system of training and also have served to assist small businesses in filling their manpower needs for youth in the skilled trades.

Assessment of the Youth Apprenticeship Demonstration as a whole suggests that:

- The linkage between employers and schools provides a labor exchange serving small businesses seeking skilled workers and young workers seeking career opportunities in skilled trades;
- The linkage between employers and apprenticeship provides student apprentices with an assurance of potential for career advancement and provides employers with a mechanism that facilitates continued skill development of entry level workers; and
- Based upon careful consideration of appropriate locations and strategies for implementation, the positive outcomes of the Youth Apprenticeship Demonstration can be achieved at a considerable reduction in direct program cost.

The research on USDOL's apprenticeship-school linkage demonstration indicates general success in demonstrating positive outcomes for youth involvement in apprenticeship during the high school years. The projects have provided skilled manpower for employers, an enhanced training capability for schools, and relevant youth employment opportunities with continued employment potential.

CHAPTER 1: INTRODUCTION

The U.S. Department of Labor (USDOL) implemented the Youth Apprenticeship Demonstration in 1977. The purpose of this demonstration effort was to test the feasibility and potential of apprenticeship-school linkage projects involving the in-school employment of youth in registered apprenticeship positions. CSR, Incorporated was contracted to conduct research related to project operations, implementation issues, and assessment of impacts. This Phase II report on the demonstration effort examines outcomes for students and employers who have participated in the demonstration.

Chapter 1 consists of five sections: (1) an overview of the development and objectives of the Youth Apprenticeship Demonstration; (2) a summary of the Phase I research; (3) a description of the scope and objectives of the Phase II research; (4) a presentation of key concepts and terms used in the report; and (5) a brief outline of the organization of the report.

1.1 OVERVIEW OF THE YOUTH APPRENTICESHIP DEMONSTRATION

As part of USDOL's effort to bridge the gap between apprenticeship and secondary education, especially vocational education, the Youth Apprenticeship Demonstration was initiated to establish linkages between the two systems. The key feature of the demonstration has been registered apprenticeship employment and training for youth while they are still enrolled in high school. Individual Youth Apprenticeship Projects (YAPs) have been implemented since 1977 in eight different sites, including: Cleveland, Ohio; Houston, Texas; Nashville, Tennessee; New Orleans, Louisiana; Des Moines, Iowa; Rockford, Illinois; and the States of New Jersey and Rhode Island

(statewide demonstrations). Local YAPs achieve linkages within local school systems, develop apprenticeship job slots, and coordinate employer program registrations and student apprentice registrations with the Bureau of Apprenticeship and Training (BAT) and/or State Apprenticeship Councils (SACs).

The USDOL intervention strategy represents a unique model of apprenticeship-school linkage to affect youth employment. As a youth employment demonstration, the projects provide in-school skilled trades employment opportunities for youth, as well as a planned continuity for later post-high school apprenticeship training and employment. Both of these features of skilled trades employment and continuous employment after high school with the same employer generally are not available with most in-school employment programs.

The major goals of the Youth Apprenticeship Demonstration as an intervention model are:

- To demonstrate the feasibility of apprenticeship-school linkages by facilitating the in-school employment of youth in registered apprenticeship positions;
- To promote the use of registered apprenticeship as a system of training for the skilled trades among employers with employees in apprenticeable occupations; and
- To ease the school-to-work transition of youth by initiating youth employment in apprenticeship occupations during the high school years, thus providing job continuity following high school graduation.

These goals represent USDOL's underlying rationale for the demonstration effort to bridge the gaps between apprenticeship and vocational education. Generally, the goals have not changed over the duration of the program.

The Youth Apprenticeship Demonstration originated as part of the Secretary of Labor's program of New Initiatives in Apprenticeship, and was

originally called the Apprenticeship-School Linkage Initiative.[1] The initiatives program as a whole grew out of deliberations by the Secretary of Labor's Task Force on Apprenticeship, which suggested specific ways to increase the number of registered apprenticeship programs and registered apprentices in the United States.

To implement the Apprenticeship-School Linkage Initiative, four demonstration sites were established by the Bureau of Apprenticeship and Training (BAT) in the fall of 1977 and funded on a 1-year basis through the Secretary of Labor's Discretionary Fund. The four demonstration projects were located in the cities of Cleveland, Houston, Nashville, and New Orleans. Sponsors of the projects included two community colleges (Houston and New Orleans), one city school system (Cleveland), and one non-profit organization developed specifically to sponsor the local demonstration (Nashville). These project sites were selected based on the following criteria:

- Relatively low unemployment;
- Adequate skill training facilities; and
- Strong support for the demonstration concept from the local apprenticeship community.

These criteria were established to avoid negative conditions which might handicap the demonstration effort from achieving successful outcomes. Thus, if apprenticeship-school linkage was a valid concept and programmatically feasible, the intervention was to be tested in a positive environment.

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[1]The overall initiatives program involved four projects, including the Federal-State Partnership Initiative, the Selected Industry Promotion Initiative, the Multi-Trades Councils and, finally, the Apprenticeship-School Linkage Initiative, the subject of this Phase II report.

Each demonstration site was encouraged to develop its own implementation strategy within the boundaries of the existing system of apprenticeship standards and registration processes. However, BAT provided two general guidelines. First, the demonstration projects were directed to focus their efforts toward those occupations outside of the construction trades. Second, projects were directed to specify goals relating to the number of student apprentice registrations expected in their project areas. These specified goals would be used as an evaluation criterion in determining the extent to which project goals were achieved. Local BAT representatives monitored each demonstration project.

In order to induce the cooperation of local employers in the demonstration effort, funds for employer stipends were provided in the local projects' budgets. These funds allowed payment of training stipends to employers for up to one-half of the student apprentice's wages, but not to exceed $1,700 per student apprentice per year.[2]

Each of the demonstration sites originally was funded for a 1-year period. At the end of the 1978 fiscal year, however, unused funds at the sites were sufficient to continue the demonstrations into the 1978-79 academic year. Three of the four sites (excluding Houston, Texas) received authorization for continued 1978-79 operations. From a historical perspective, the implementation of the original four demonstration sites, under the aegis of BAT, constitutes the first stage of a two-stage developmental process.

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[2]In later years, this maximum amount for training stipends was increased to $2,100 per student apprentice per year.

The second stage of the demonstration effort resulted from the decision by the Office of Youth Programs (OYP), in 1977, to expand the demonstration concept, since financial constraints precluded expansion under BAT sponsorship. In the fall of 1978, OYP funded four additional YAPs, located in Des Moines, Iowa, Rockford, Illinois, and in the States of New Jersey and Rhode Island. Sponsors of the individual demonstrations included two State systems of education (New Jersey and Rhode Island), one city school system (Des Moines), and one independent, non-profit organization associated with a vocational school that provided vocational training for students in area public schools (Rockford).

Registration goals for student apprentice registrations for the new demonstrations were established in a manner similar to the original project sites, and the focus of the projects, again, was oriented toward apprenticeable occupations outside of the construction trades. At each of the OYP sites except New Jersey, funds were provided for training stipends to employers as an incentive to induce employer participation in the demonstration. The New Jersey YAP declined to use direct training stipends to participating employers and, instead, promoted the use of the Targeted Jobs Tax Credit, which was available to employers of cooperative education students. Local BAT representatives assumed monitoring responsibility for the new demonstrations, consistent with prior monitoring demonstration procedures.

The new demonstration sites funded by OYP expanded the YAPs to a total of seven sites, under the same fundamental model originally initiated by the Apprenticeship-School Linkage Initiative. However, the four new demonstrations did involve one aspect of project operations not included in the

original model. The new OYP projects included targeting economically disadvantaged students to participate as student apprentices, an activity not specifically mandated in the original demonstration effort, i.e., the BAT sites. Overall, however, the inclusion of the new OYP projects simply increased the number of sites at which the demonstration was tested and at which the impacts of the apprenticeship-school linkage intervention could be examined. All seven operating YAPs are currently funded by OYP and are expected to terminate at the end of September 1981.

1.2 SUMMARY OF PHASE I RESEARCH

Research conducted on the Youth Apprenticeship Demonstration has focused upon two primary features of the demonstration effort. A Phase I process evaluation to examine the initial development, operations, and structure of each of the YAPs preceded the Phase II impacts assessment. The results of the Phase I investigation are summarized in this section of Chapter 1.

Each of the YAP sites was visited by a senior CSR, Incorporated staff member during the Phase I investigation in order: (1) to gain some understanding of the development and current operations of the projects; (2) to assess the types of problems and implementation issues involved; (3) to identify salient features characteristic of all the YAPs; and (4) to assist the study team in designing the Phase II impacts assessment. A total of 162 semi-structured interviews were conducted with project personnel, advisory committee members, employers, student apprentices, school staff, and BAT monitors. Individual site visit reports were written for each YAP and a

Summary and Issues report on the findings across all of the demonstrations was produced as part of the Phase I investigation.[3]

Findings from the Phase I research suggested that:

- YAP linkage with school systems could be achieved more readily with careful attention to school system protocol and an academic year funding cycle;
- Except for local demand for skilled manpower, other local features, such as general unemployment rates and emphasis in vocational education, did not appear to affect YAP implementation;
- Linkages through cooperative education programs in the local schools were a major vehicle for apprenticeship-school linkages and student recruitment;
- Considerable time was necessary in startup at all of the YAPs before the projects were fully operational;
- Recruiting of employers and student apprentices generally required direct personal contact to develop apprenticeship job slots and apprentice registrations;
- Cooperation between BAT staff and the YAP staff was a fundamental element in processing program and apprentice registration. Different orientations about in-school work for students and traditional apprenticeship sometimes developed misunderstandings between BAT and the YAPs;
- The types of YAP sponsors, i.e., State education agencies, local education agencies, community colleges, and non-profit corporations, seemed to affect the ease of implementing school linkages, but not employer linkages; and
- The reporting system for the YAPs, in terms of the number of apprentices registered tended to orient project operations toward the achievement of numeric goals.

Overall, the Phase I results indicated that apprenticeship-school linkages were achievable in diverse local settings and under different types of

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[3]The two-volume Phase I process evaluation, entitled Interim Report: A Study of New Youth Initiatives in Apprenticeship, was submitted to the Office of Youth Programs on July 8, 1980.

local sponsorship. The problems of implementation often related to differences in approaches to part-time employment for school youth, school system policy requirements, adherence to BAT registration processes, and registration goals as a measure of success. Also, the Phase I investigation suggested that the apprenticeship-school linkage concept had considerable potential as an education-training pathway for youth interested in the skilled trades.

1.3 SCOPE AND OBJECTIVES OF PHASE II RESEARCH

This Phase II research concentrates on the measurement of project outcomes with emphases on the post-high school labor market experiences of the student apprentices and the impacts of project participation on employers of the student apprentices. Thus, the scope of the present report is limited generally to effects of the projects and to measurement of impacts derived from a follow-up survey of students and employers.

1.3.1 Measurement of Outcomes for Student Apprentices

The design used to examine impacts for student apprentices consists of two assessments. First, impacts have been assessed for the former student apprentices as a group, i.e., program participants sampled for the years 1978, 1979, and 1980. This strategy involves examination of the educational experiences of the student apprentices, their apprenticeship experience while still in high school, and their current employment status and post-high school labor market experiences. The second assessment of program impacts for the student apprentices involves an examination of differences in high school experiences and post-high school employment patterns between the student apprentices and comparison students selected as a "constructed control"

group. This participant-comparison assessment of impacts is limited to a sample of participants and comparisons from the years 1979 and 1980. It excludes the Houston site which was discontinued in the fall of 1978. Both designs involving student apprentices have somewhat similar measures of impacts, since the primary focus of the research is upon post-high school outcomes. Impacts are assessed in the following general areas:

- Post-high school employment patterns, including current or most recent employment and wages;
- Occupational stability, i.e., to what extent are the former students employed in those occupations for which they trained in high school;
- Job satisfaction on current or most recent employment; and
- School-to-work transition problems identified by those students who entered the labor market immediately following high school.

For the former student apprentices as a group, i.e., high school graduates of 1978, 1979, and 1980, additional impacts are examined in the areas of:

- Retention in registered apprenticeship positions following graduation from high school;
- Assessments of program participation influences on career objectives; and
- Evaluation of the influences of the student apprentice experience on school-to-work transitions.

Each assessment concludes with multiple regression analysis (path analysis). These analyses abstract select critical predictor and outcome variables to determine effects of input and programmatic variables on the outcomes of program participation, e.g., job performance, job satisfaction, and retention in apprenticeship. In other words, the multiple regression analyses are used somewhat to describe and summarize the major findings of the impacts assessment.

1.3.2 Measurement of Outcomes for Participating Employers

Similar to the measurement of impacts for student participants in the program, the areas of assessment for employers involve both self-reported evaluations of the program and definitive outcomes related to program participation. For example, a critical outcome for employers is the extent to which employers, as a result of program participation, adopt registered apprenticeship training as part of their employee development system. Impacts and outcomes for employer participants include assessments in the following areas:

- Adoption of registered apprenticeship as a system of training;
- Retention of student apprentices as regular, full-time apprentices after the end of high school;
- Assessment of the job performance of the student apprentices compared to other young workers who have worked at the firm; and
- Evaluation of the effectiveness of the program in terms of assisting students in the school-to-work transition.

Another critical factor assessed with the employers relates to the effectiveness of the incentive method employed to solicit employer participation in the project, i.e., the use of training stipends paid to employers to induce their participation in the demonstration. Thus, in addition to examination of the impacts mentioned previously, the relative effects of employer stipends are examined in detail in this Phase II research. In particular, the effects of employer stipends on the number of student apprentices hired and on the number of student apprentices retained after high school graduation are examined by multiple regression analysis. Similar to the multivariate analyses for the apprentices, selected critical programmatic variables are examined as predictors of specific outcomes.

1.4 KEY CONCEPTS AND TERMS USED IN THE REPORT

Throughout this Phase II report, a set of key concepts and terms will be used which have particular connotations important to the understanding of this report. The following key terms and concepts are defined in this section:

- Youth Apprenticeship Demonstration;
- Student Apprentices;
- Cooperative Education;
- Apprenticeship Registration; and
- School-to-Work Transition.

The term Youth Apprenticeship Demonstration is used throughout this report to mean the overall USDOL demonstration effort related to the combined operations of the YAPs. As the demonstration developed, some shift from strictly an apprenticeship focus to a youth program focus has emerged with the funding of the demonstration effort by the Office of Youth Programs. Thus, the term Youth Apprenticeship Demonstration connotes both the youth program aspects of the demonstration and its implementation through the system of registered apprenticeship.

The term student apprentice is used in this report to refer to those students who were registered as apprentices while they were still enrolled in high school, i.e., the students who participated in the program. The term is used to refer to the student program participants whether or not they were registered fully or registered provisionally as apprentices through the BAT or SACs.

Cooperative education is defined as a program which includes both study in school and employment in industry or business while in school. The

employment may be scheduled as part of the school day, on alternate weeks, or on some other basis. The important feature is that the employment is planned and supervised by the school. Cooperative education programs frequently are administered within the vocational programs offered at particular schools and involve a cooperative education coordinator who supervises the education-work experiences of the students. Cooperative education is directed toward specific on-the-job skill training related to the student's vocational program of study in high school. Students are paid at minimum wages or a lump sum stipend while training. Thus, with the exception of specified wage scales and structured wage increments found in apprenticeship agreements, the general concept of structured training related to well-run cooperative education programs is quite similar to the contractual arrangements in apprenticeship.

The term apprenticeship registration refers both to the registration of an apprenticeship program and to the registration of an apprentice. Both of these components of the registration process include involvement of either the BAT or the SAC. The first component is the registration of an apprenticeship program in a specific trade with an employer. This process involves the approval of a systematic schedule of training in different trade skills provided for an apprentice over the period of the apprenticeship. The usual duration of the training is from 2 to 6 years. The work processes and training schedule, usually denoted as a specific number of hours at each particular skill area, are reviewed and approved by BAT or SACs with reference to apprenticeship standards. Employers can maintain registered apprenticeship programs for a period of time even if no apprentices are currently employed in the program. A second component of registered apprenticeship is the

apprentice registration. Apprentice registration requires an agreement between the employer and the employee to involve the apprentice in the apprenticeship training and at specific wages with set periods of wage increments over the period of the apprenticeship.

As used in this report, school-to-work transition refers to the adjustment processes accompanying the transition or change to full-time employment. The adjustments inherent in the school-to-work transition may be problematic for some individuals, whereas others may be able to adjust without difficulty. While it would be difficult to define the adjustment process in a way that would apply to all individuals, the basic concept implies status and environmental and developmental changes.

First, changing one's status from primarily a student to primarily a worker results in changes in individual as well as outside expectations for performance. Second, the school-to-work transition involves an environmental change, from exposure to the environment and requirements of a school setting to the environment and requirements of a work setting. Third, the transition from school to work can be viewed in a developmental context. That is, the period of transition usually is coincident with the onset of adulthood and the financial and emotional independence characteristic of this developmental stage.

1.5 ORGANIZATION OF THE REPORT

The subsequent sections of this Phase II report consist of the following five chapters.

- Chapter 2: Methods--This chapter describes the research design, the sampling procedures, the data collection activities, the analytic procedures and the components of analysis in the Phase II research;

- Chapter 3: Characteristics and Experiences of Student Apprentices--This chapter focuses upon a description of the characteristics of the student apprentices, their educational and student apprenticeship experiences, their post-high school labor market experiences and their assessments of the program. Chapter 3 concludes with an overall program assessments and impacts section, including a multivariate examination of the effects of apprenticeship retention;

- Chapter 4: Apprentice--Comparison Study of Program Impacts--This chapter examines differences between the student apprentices and the comparison group in personal characteristics, educational experiences, and post-high school labor market experiences. The chapter concludes with a multivariate examination of the effects of program participation;

- Chapter 5: Characteristics and Experiences of Participating Employers--This chapter describes the characteristics of the participating employers, examines their experiences with the program and presents their assessments of the demonstration effort. The chapter concludes with a multivariate examination of the impacts of program participation by employers as a group; and

- Chapter 6: Conclusions--This chapter highlights the findings of the Phase II research on program impacts for participating students and employers.

CHAPTER 2: METHODS

This chapter describes the methodology employed in Phase II of the Study of New Youth Initiatives in Apprenticeship. The chapter is divided into five major sections: (1) an outline of the principal data sources and data elements for the Phase II research; (2) a presentation of the sampling plan developed for the Phase II research; (3) a description of the sampling procedures used in implementing the sampling plan; (4) a discussion of various aspects of the data collection effort and the results obtained; and (5) an overview of the data reduction procedures and the analytic approaches employed.

2.1 DATA SOURCES AND DATA ELEMENTS

The basic design for the Phase II research consists of a cross-sectional survey of four respondent groups:

- Student apprentices;
- Comparison students;
- Employers; and
- Supervisors.

The student apprentices are those sampled respondents who participated in a Youth Apprenticeship Project (YAP). The comparison students are those sampled respondents who did not participate in a YAP and who were selected to serve as a comparison group for the student apprentices based upon pre-identified similarities to the student apprentices. The employers and supervisors are those sampled respondents who are employed by organizations which cooperated with YAPs by providing employment for student apprentices.

The interview schedules developed for the four respondent groups sought to provide quantifiable indicators in six major areas:

- Pre-existing characteristics and experiences;
- Program experiences;
- Outcomes;
- Program assessments;
- Job performance evaluations; and
- Observations concerning the school-to-work transition.

All six data element areas are not relevant to each of the data sources. For example, pre-existing characteristics and experiences of supervisors are not examined. Table 2-1, which follows, presents a matrix of the data sources and data elements involved in the Phase II research. Detailed information on data sources and data elements is presented in the subsequent sections.

2.1.1 Student Apprentices and Comparison Students

For student apprentices and comparison students, the data collection emphasis was on pre-existing characteristics and experiences and outcomes. Data collection in the area of pre-existing characteristics and experiences focused on demographic characteristics (e.g., sex, age, ethnicity) and educational experiences. The type of education (e.g., vocational, college preparatory and/or commercial) also was an area of inquiry. The emphasis concerning outcomes was upon current employment, including the occupation, the wages received, and the job satisfaction derived.

For student apprentices, description of their program experiences was a major focus of the data collection effort. Questions were asked regarding all aspects of participation in a student apprenticeship. This included

TABLE 2-1

Matrix of Data Sources and Data Elements for the Phase II Research Effort

Data Elements	Data Sources: Student Apprentices	Comparison Students	Employers	Supervisors
Pre-existing characteristics and experiences	X	X	X	
Program experiences	X		X	
Outcomes	X	X	X	
Job performance evaluations				X
Program assessments	X		X	X
Observations concerning the school-to-work transition	X	X	X	X

objective measures, such as wages, hours worked per week, and existence of other student apprentices in the school, as well as subjective measures, such as problems encountered and level of satisfaction with the experience. Further, the relationship between current employment and student apprenticeship experience was examined. Overall, the data elements for student apprentices and comparison students were identical, except that no information was collected on apprenticeship experiences for comparison students.

2.1.2 Employers and Supervisors

At each employing organization sampled for inclusion in the study, data were sought from an employer respondent and a supervisor respondent. The employer respondent was defined as the individual who decided that the organization would employ student apprentices in cooperation with a YAP. The supervisor respondent was defined as the individual responsible for direct oversight of the job performance of a sampled student apprentice. In many cases, the same individual was the respondent for both the employer and the supervisor data collection components.

The pre-existing characteristics of greatest interest included basic descriptors of the employing organization. The previous experiences of greatest interest related to the employing organization's prior use of apprenticeship as a training system. The program experiences emphasized for this respondent group included the factors which had prompted each employer to cooperate with a YAP and the number of student apprentices hired by each sampled employing organization. The outcomes emphasized included the number of former student apprentices still employed by the organization and the permanence of apprenticeship as a training system for the organization. The

program assessments sought from employer respondents included evaluations of the overall effectiveness of the YAP, the suitability of the student apprentices referred to the employing organization, and the usefulness of apprenticeship as a training system.

The supervisor data collection component was devoted almost exclusively to job performance evaluations of specified student apprentices. For those employing organizations where the supervisor respondent was not the same individual as the employer respondent, the supervisor data collection component also included a few basic program assessments as well as a few basic observations concerning the school-to-work transition.

2.2 SAMPLE DESIGN

The sample design established the criteria for selecting the individuals to be interviewed within the four respondent groups identified in the previous section. For student apprentices, a random sample stratified by project site and year of graduation was used. For comparison students, the sample design matched a sample of nonparticipating students to the participating student apprentices. For employers and supervisors, the sample design provided a random sample stratified by project site, with a direct linkage between the sample of student apprentices and the sample of employers and supervisors.

The sample universe was defined to include all student apprentices and employers who participated at any time between the beginning of each project's operations and March 31, 1980. For the three projects initiated with BAT funding that are still active, this sample universe includes the first 2 years of operation and a portion of the third year. For the Houston project,

the fourth project initiated with BAT funding, this sample universe includes the single year that this project was in operation. For the four newer sites initiated with OYP funding, the sample universe includes the first year of operation and a portion of the second year.

2.2.1 Sample Design for Student Apprentices and Comparison Students

In developing the sample design for the student apprentices, two sets of factors received particular attention. On the one hand, an effort was made to maintain a similar ratio across sites between the number sampled and the number in the universe so that the overall sample of student apprentices would be roughly self-weighted. On the other hand, an effort also was made to ensure that there would be adequate numbers of student apprentices from each year of graduation at each site to permit separate analyses of these strata. This latter feature of the sampling approach required selection of a minimum number of sampled student apprentices within each stratum. Thus, the sample design includes a somewhat higher proportion of student apprentices from the smaller sites and from the first year of operation at the BAT sites (as compared to their representation in the overall universe of student apprentices).

Inclusion of comparison students within the research design adds a quasi-experimental dimension to the study and makes it possible to estimate the net impact of program participation based upon comparisons between the student apprentices and the comparison students. A rigorous matching process was employed in selecting the sample of comparison students. The purpose of this matching process was to ensure that, to the fullest extent possible, comparison students would be similar to student apprentices in all respects

except program participation. This relationship between the two groups maximizes the ability to attribute differences in outcome to the presence or absence of program participation. The five characteristics which served as the basis of the matched sampling of comparison students were:

- Year of graduation;
- High school attended during the 12th grade;
- Sex;
- Race; and
- Vocational curriculum during the 12th grade.

Table 2-2, which follows, presents the total number of student apprentices in the sample universe at each project and the number of student apprentices sampled from each project. Table 2-2 also presents the number of comparison students sampled from each project.

Comparison students were selected to match the student apprentices who graduated in 1979 and 1980. Comparison students were not selected to match student apprentices who graduated in 1978 because of the difficulty in obtaining the necessary documentation. Thus, at the four OYP-initiated projects, all student apprentices are matched with comparison students since the earliest student apprentices at these sites graduated in 1979. At the three projects initiated by BAT that are still active, those student apprentices who graduated in 1978 are not matched with comparison students, while those student apprentices who graduated in 1979 and 1980 are matched with comparison students. At the Houston project, which only operated for 1 year, documentation difficulties precluded matching of student apprentices with comparison students.

TABLE 2-2

Number of Student Apprentices in Sample Universe,

Number of Student Apprentices Sampled,

and Number of Comparison Students Sampled at Each Site

Site	Total Student Apprentices	Sampled Student Apprentices	Sampled Comparison Students
Cleveland	351	152	100
Houston	111	50	--
Nashville	197	130	100
New Orleans	655	226	141
Des Moines	48	36	36
New Jersey	342	100	95
Rhode Island	253	101	100
Rockford	94	50	49
Total	2051	845	621

The matched comparison group methodology that was employed for this study provides a rigorous examination of the impacts of the program upon student apprentices. This approach does not, however, provide any estimate of the impact of the program upon participating schools in terms of an increase in the number of high quality employment opportunities available for in-school youth. In order to derive accurate estimates of the impact of the program upon participating schools, it would have been necessary to select a sample of "comparison schools" which had not cooperated with local YAPs. This approach was not within the scope of work for this research effort. Some effect of the program upon participating schools may be presumed, but the magnitude of the effect has not been measured by this study.

2.2.2 Sample Design for Employers and Supervisors

For the employer and supervisor respondents, the basic sampling unit is an employing organization. As described in the previous section, definitions of the employer and supervisor respondents were applied within each employing organization in order to identify the appropriate individuals to be interviewed. Table 2-3, which follows, presents the total number of employing organizations in the sample universe and the number of employing organizations sampled at each site.

The sample of employing organizations was linked to the sample of student apprentices. Employing organizations were selected at random within sites, with each organization having a probability of inclusion equal to the total number of student apprentices hired by that organization. In this way, it was possible to request a job performance evaluation for at least one sampled student apprentice at each sampled employing organization.

TABLE 2-3

Number of Employing Organizations in Universe

and Number of Employing Organizations Sampled at Each Site

Site	Number of Employing Organizations in Universe	Number of Employing Organizations Sampled
Cleveland	191	50
Houston	37	25
Nashville	92	50
New Orleans	311	75
Des Moines	44	20
New Jersey	260	50
Rhode Island	178	50
Rockford	64	26
Total	1177	346

The sample design for the employing organizations sought to balance the same two considerations described previously with respect to the sample design for the student apprentices. That is, the sample design for employing organizations sought, on the one hand, to provide a rough equivalence across sites in terms of the proportion of the sample universe to be selected for inclusion in the study. On the other hand, the sample design also sought to ensure inclusion of an adequate number of employing organizations from each site to permit certain basic analyses to be performed within sites. As a result of this approach, those sites with a relatively low total number of employing organizations are represented in the sample in somewhat greater proportions than their representation in the universe.

2.3 SAMPLING PROCEDURES

The previous section described the basic sampling plan developed for the Phase II research. This section describes the relevant procedures employed to implement this sampling plan. Briefly, the sample of student apprentices was selected randomly from a written listing of registered student apprentices that each YAP had provided. The selection of the matched sample of comparison students required site visits to each of the individual high schools attended by the student apprentices. School staff provided research project staff members with access to school records and assisted the researchers in identifying and selecting appropriate comparison students. The sample of employing organizations for each of the sites was determined through random selection of a subset of the sampled student apprentices. Once the employing organizations were selected, the appropriate employer and supervisor respondent(s) were identified. The procedures followed for the

four respondent groups are described in greater detail in the subsections that follow.

2.3.1 Selecting the Sample of Student Apprentices

In order to establish the sample universe of the student apprentices, each YAP was requested to provide a listing of all student apprentices registered, starting at the inception of each project's operations and ending on March 31, 1980. CSR provided the projects with a standard form for this purpose. The form included space to record the following information concerning each student apprentice:

- Name;
- Address;
- Telephone number;
- Sex;
- Race;
- Year of graduation;
- School attended;
- Employer; and
- Occupational area of apprenticeship.

When these forms were returned to CSR, they were organized by project and by year of graduation. Within these strata, each student apprentice was assigned a number. Then the sample of student apprentices was identified by drawing random digits and selecting the student apprentices whose assigned numbers corresponded to the random digits drawn.

Because some basic data were collected for all student apprentices in the sample universe, it has been possible to make comparisons between the

universe, the sample, and the respondents to check for sample bias and response bias. Collection of data on the universe of student apprentices also revealed one limitation in the projects' recordkeeping systems. For some of the student apprentices, the year of graduation was not available from project records. For some of the other student apprentices, a year of graduation was available, but it was found, in the course of further investigation, to be incorrect. The absence or incorrectness of the information is the result of the lack of incentive for projects to maintain specific data on the student apprentices' year of graduation.

2.3.2 Selecting the Sample of Comparison Students

A significant effort was devoted to the selection of the matched group of comparison students. Following the selection of the sample of student apprentices, a site visit was conducted at each YAP for the specific purpose of selecting the sample of comparison students. These visits were conducted by the same senior staff members who previously had conducted the program review site visits during Phase I of the research project. In most cases, the site visits undertaken for comparison group sampling required an effort equal to or greater than that devoted to the Phase I program review.

The level of effort required to complete the comparison sampling was attributable to the logistical demands inherent in the selection of the comparison group. Each YAP collaborated with a number of different secondary schools and, at many of the projects, these secondary schools were within the jurisdiction of different local school systems. Unlike the student apprentices, there was no central source of information concerning those eligible to be sampled for the comparison group. Therefore, sampling

of comparison students, for the most part, required in-person visits to the individual high schools attended by the sampled student apprentices. Furthermore, arrangements of the necessary visits to the relevant local secondary schools involved prior administrative approval and scheduling, both at the local school system level and at the individual school level.

At the individual schools, each comparison student was selected based upon the match with a particular sampled student apprentice who attended that school. Guidance counselors, cooperative education coordinators, and vocational instructors provided access to necessary school records and assisted research project staff members in identifying and selecting appropriate comparison students to match the sampled student apprentices. In summary, therefore, the selection of the sample of comparison students involved a rigorous match with sampled student apprentices and also involved tight control of the selection process by senior members of the research team.

2.3.3 Selecting the Sample of Employers and Supervisors

Prior to the selection of the sample of employers and supervisors, the sample of employing organizations was determined. After the sample of student apprentices was selected for each site, the sample of employing organizations for that site was determined through random selection of a subset of the sampled student apprentices. Just as the total sample of student apprentices at each site was selected by drawing random numbers, identification of the group of sampled student apprentices whose employing organizations were chosen for inclusion in the research effort was also done through random number selection. Selection of the sample of employing organizations in this

manner ensured that every employing organization chosen for study had experience with at least one of the student apprentices sampled for inclusion in the study. When two or more student apprentices in the initially selected subset were found to have been employed by the same organization, additional sampled student apprentices were selected until the full complement of employing organizations at each site was complete.

Once the sample of employing organizations was selected for each site, the respondent for the employer section of the Employer/Supervisor Interview Schedule was identifiable without further sample selection processes. Selection of the respondent for this section of the interview schedule was based upon the criterion that this section was to be addressed to the individual who made the decision that the employing organization would cooperate with the local YAP.

Identification of the supervisor section respondent of the Employer/Supervisor Interview Schedule was based upon the supervisory relationship that this respondent had with a specific sampled student apprentice. This criterion is directly related to the fact that the supervisor section of the interview schedule consists principally of a job performance evaluation of a specific sampled student apprentice. It had been determined as part of the study design that no more than three job performance evaluations would be requested from any sampled employing organization. Therefore, for all the sampled employing organizations that had employed between one and three sampled student apprentices, the Employer/Supervisor Interview Schedule included names of all of these individuals so that the appropriate supervisor(s) could be identified.

Some sampled employing organizations had employed more than three sampled student apprentices. In the case of the employing organizations in this category, it was necessary to select three sampled student apprentices for whom job performance evaluations could be requested. In making these selections, an effort was made to include sampled student apprentices who had graduated in different years. Beyond that, the selection process was random. Based upon the three sampled student apprentices selected, it then was possible to identify the supervisor respondents for each employing organization in this category.

2.4 DATA COLLECTION

This section describes the relevant features of the data collection effort for the Phase II research under five headings. The first subsection describes the structured interview schedules used for data collection. The second subsection describes the selection and training of the local data collection teams. The third subsection describes the site specific time frames for data collection at the local sites. All data collection activities were conducted during the last 6 months of 1980. The fourth subsection presents the interview response rates obtained during the field effort. Overall, about three-fourths of the student apprentices and comparison students were located and interviewed. The fifth subsection describes the quality control procedures implemented in conjunction with the data collection effort. Quality controls included verification of a sample of the completed interviews and careful editing of interview schedules as they were received from the field.

2.4.1 Structured Interview Schedules

During the design phase of the study, two structured interview schedules were developed for use with the four groups of respondents included in the Phase II research. One interview schedule was developed for use with student apprentices and comparison students. It was adapted to the somewhat different data needed from these two respondent groups through the use of skip patterns in the sequence of questions. Thus it was possible to use the Out-of-School Apprentice/Comparison Interview Schedule with either a student apprentice respondent or a comparison student respondent.

The other interview schedule developed was for use with employers and supervisors. In the case of this interview schedule, the first section includes questions to be asked of the employer respondent and the second section includes questions to be asked of the supervisor respondent. Thus, completion of a single Employer/Supervisor Interview Schedule involved completion of both these sections. In some cases, both the employer and supervisor sections were completed by interviewing one individual who fulfilled both of the functionally defined respondent roles. In other cases, the employer section was completed by interviewing an individual who fulfilled only the employer respondent role while the supervisor section was completed by interviewing between one and three other individuals who fulfilled the supervisor respondent role.

Both interview schedules were based primarily upon questions with pre-coded responses. However, both interview schedules also included some questions with open-ended responses since some important areas of inquiry were not amenable to the development of pre-coded response categories. Copies of the two interview schedules are appended to this report.

2.4.2 Local Data Collection Teams

Data collection activities for each YAP were initiated during site visits to each location conducted by the same senior members of the research team who had conducted the previous program review site visits and the comparison sampling site visits. Thus, selection and training of the key members of each local data collection team were conducted in-person by senior members of the research team who were well-acquainted with both the general features of the study design and the specific features of the local YAP.

At most sites, the data collection team included one local field research associate and one or more local interviewers. At each location, the field research associate had overall responsibility for local data collection activities under the direction of the senior member of the research team responsible for that location. In most cases, the field research associates conducted all of the interviews with the employers and supervisors, carried out some of the interviews with student apprentices and comparison students, and supervised interviewers who were responsible for the conduct of the balance of the interviews with student apprentices and comparison students. When interviewers had to be added or replaced, the field research associates were responsible for recruiting and training the new interviewers. The responsibilities of field research associates in supervising and monitoring interviewers also included verifying a sample of the interviews conducted by the interviewers.

2.4.3 Time Frame for Data Collection

All data collection activities were conducted during the last 6 months of 1980. Within that general time frame, the specific time frame for data

collection activities at the individual sites varied somewhat. In general, data collection activities were completed in a shorter time at the four sites initiated under OYP-funding than at the four sites initiated under BAT funding. Two factors are relevant to this difference between the two groups of sites. First, the OYP-initiated sites generally included a smaller number of sampled respondents than the BAT-initiated sites. Second, all the student apprentices and comparison students sampled at the OYP-initiated sites had graduated from high school in 1979 or 1980, whereas some of the sampled student apprentices at the BAT-initiated sites had graduated from high school in 1978. This longer time period since graduation can be correlated with a greater degree of difficulty in locating the respondents for interviews.

In addition to the general difference between the two types of sites, there also was individual variation among the sites relating to the time of data collection. Data collection activities in Rhode Island, Rockford, and Des Moines were initiated and completed during the first 3 months of the data collection period. Data collection activities in New Jersey were initiated and completed during the last 3 months of the data collection period. Data collection activities at Cleveland, Houston, Nashville, and New Orleans were initiated during the first 3 months of the data collection period and were completed during the last 3 months of the data collection period.

2.4.4 Response Rates

Table 2-4 presents the number of student apprentices and comparison students interviewed at each site and the interview response rates for these two respondent groups. The interview response rates were calculated by

TABLE 2-4

Number Interviewed and Response Rates for Student Apprentices and Comparison Students by Site

Site	Student Apprentices		Comparison Students	
	Number Interviewed	Response Rate	Number Interviewed	Response Rate
Cleveland	133	88%	77	77%
Houston	15	30%	--	--
Nashville	81	62%	54	54%
New Orleans	143	63%	92	65%
Des Moines	31	86%	29	81%
New Jersey	99	99%	90	95%
Rhode Island	94	93%	89	89%
Rockford	46	92%	43	88%
Total	642	76%	474	76%

dividing the number interviewed by the number sampled. In total, over 75 percent of the student apprentices and comparison students were located and interviewed.

Table 2-5 presents the number of employer/supervisor interviews completed at each site and the interview response rates for this group. The interview response rates were calculated by dividing the number of completed interviews by the number of employing organizations sampled. In total, interviews were completed at over 90 percent of the employing organizations sampled. This overall interview response rate for employers and supervisors is somewhat higher than the overall response rates achieved for student apprentices and comparison students. In addition, the interview response rates by site show less variation for employer/supervisor interviews than for interviews with student apprentices and comparison students. These characteristics of the response rates for employer/supervisor interviews may be attributed to the relatively greater ease of locating and gaining the cooperation of employer and supervisor respondents.

2.4.5 Quality Control Procedures

Two principal sets of quality control procedures were implemented in conjunction with the data collection effort. The first set of quality control procedures involved verification of a sample of the completed interviews. This was accomplished by selecting respondents at random for verification and then calling them on the telephone. During this telephone conversation, each respondent was asked to confirm that the interview took place as recorded. In addition, one item from the completed interview schedule was addressed to each respondent a second time in order to check

TABLE 2-5

Number of Employer/Supervisor Interviews Completed

and Response Rates by Site

Site	Employer/Supervisor Interviews	
	Number Completed	Response Rate
Cleveland	48	96%
Houston	21	84%
Nashville	43	86%
New Orleans	66	88%
Des Moines	17	85%
New Jersey	49	98%
Rhode Island	49	98%
Rockford	24	92%
Total	317	92%

for consistency between this response and the response recorded in the completed interview schedule.

Interviews conducted by interviewers were verified by field research associates. Interviews conducted by field research associates were verified by central office staff, as were some interviews conducted by interviewers. Verification was accomplished for 23 percent of the student apprentice respondents, 25 percent of the comparison student respondents, and 15 percent of the employer respondents. None of these verifications revealed any instances of data being falsified or mishandled by any of the members of the local data collection teams.

The second set of quality control procedures involved careful screening and editing of all completed interview schedules as they were returned from the field. As a result of this process, it was determined that some student apprentice and comparison student interview schedules were not appropriate for inclusion in the analyses. For student apprentices, the most common problems were that some respondents did not recall participating in the program while other respondents clearly entered their apprenticeships after graduation from high school. For comparison students, the most common problems were that some comparison students had been sampled as graduates of 1979 and were actually 1978 graduates, while other comparison students had been sampled as graduates of 1980 when, in reality, they were not expected to graduate until 1981.

Table 2-6 presents data on the number of student apprentice and comparison student interview schedules which were usable for analyses and the proportion that these usable interviews constitute of the original sample.

Overall, 52 student apprentice interview schedules and 19 comparison student interview schedules were excluded from the analyses. No employer/supervisor interview schedules were excluded. For the student apprentices, the largest number of exclusions were from the New Jersey YAP. At this site, 25 out of a total of 99 student apprentice interview schedules were excluded from the analyses. Of the 25 excluded, 17 were omitted because the interview schedules indicated that the sampled student apprentices had graduated from high school before they had been registered as apprentices.

As indicated in Table 2-6, when all the necessary exclusions had been accomplished, data still were available for analysis for more than 70 percent of the sample of student apprentices and comparison students. It may be concluded, therefore, that exclusion of the inappropriate respondents significantly enhanced the quality and the consistency of the data base used for analysis without significantly impairing the adequacy of the data base in terms of the proportion of the sampled respondents available for analysis.

2.5 DATA REDUCTION AND ANALYSIS

This section briefly describes the data reduction procedures which were followed and the analytic techniques which were employed to compile the results of the Phase II research. The first subsection below describes the principal steps in the data reduction process. The second subsection details the resulting units of analysis. The third subsection treats the various analytic techniques employed.

2.5.1 Data Reduction Procedures

As interview schedules were received from the field, the Data Collection Manager edited them for internal consistency and pre-coded all open-ended

TABLE 2-6

Number of Usable Interviews for Student Apprentices and Comparison Students by Site

Site	Student Apprentices		Comparison Students	
	Number of Usable Interviews	Proportion of Sample	Number of Usable Interviews	Proportion of Sample
Cleveland	126	83%	72	72%
Houston	15	30%	--	--
Nashville	76	59%	52	52%
New Orleans	130	58%	88	62%
Des Moines	30	83%	28	78%
New Jersey	74	74%	86	91%
Rhode Island	94	93%	88	88%
Rockford	45	90%	41	84%
Total	590	70%	455	73%

responses. Following this initial process, the interview data were coded into numerical form and recorded in machine readable format for key punching. Following the coding, the data were keypunched and verified. Once the data files were complete, a machine edit also was performed in order to check the internal consistency of the interview schedules and to ensure that the values for all variables were within the proper ranges.

Following the machine edit, basic frequencies were obtained for all the variables. Based upon these frequencies, some categorical variables and a large number of categories were simplified by collapsing discrete categories into larger logical categories. Similarly, some continuous variables were transformed into appropriate categorical form.

2.5.2 Units of Analysis

The data base derived from the Phase II research effort includes five basic units:

- Basic indicators for all student apprentices in the sample universe based upon the record review conducted in conjunction with sampling;
- Data from interviews with student apprentice respondents;
- Data from interviews with comparison student respondents;
- Data from interviews with employer respondents; and
- Job performance evaluations based upon interviews with supervisor respondents.

With the exception of the data based upon interviews with comparison student respondents, each of the analytic units described above was subjected to separate analysis.

In addition to the separate analyses of the four basic analytic units, further analyses were performed based upon two additional combinations of

the analytic units. First, the data based upon comparison student respondents were analyzed in combination with the data based upon student apprentice respondents. Second, the relevant job performance evaluations were merged with the data based upon student apprentice respondents in order to permit additional analyses. In all, therefore, six basic units or combinations of basic units were subjected to analysis.

2.5.3 Analytic Techniques

For each of the six analytic units, basic frequencies and means were calculated for each variable. In addition, for each of the 6 analytic units, relevant variables were selected for examination of cross tabulations and differences of means with computation of the accompanying chi-square and t-test statistics or one-way ANOVAS to determine the statistical significance of observed differences.

In addition to these fundamental analyses, three of the analytic units were subjected to further, multivariate analyses. The student apprentice data, the combined student apprentice and comparison student data, and the employer data were analyzed using multiple regression analysis. The multiple regression technique was applied within the framework of a causal model using path analysis to determine the direct and indirect effects of independent variables upon criterion variables. In the case of all the analytic units, the multiple regression technique was reserved for examination of the major outcomes of interest and their relationships with the principal factors which may be reasonably presumed to have some association with outcomes.

CHAPTER 3: CHARACTERISTICS AND EXPERIENCES OF STUDENT APPRENTICES

The apprentice sample consists of individuals selected from eight project sites. As has been previously explained, the sample totalled 590 former student apprentices who were administered the same questionnaire as the comparison group, with appropriate skip patterns, during the summer of 1980. Chapter 3 describes the characteristics and experiences of the student apprentice group.

3.1 PERSONAL CHARACTERISTICS AND EDUCATIONAL EXPERIENCES OF THE APPRENTICE SAMPLE

This section of the chapter discusses the apprentices' demographic characteristics and those experiences during high school which had a bearing on the students' vocational objectives. The discussions are organized into four major topics: (1) personal characteristics; (2) educational experiences, which include the students' instructional programs, occupational orientation, and career assistance received; (3) vocational objectives during high school; and (4) in-school work experiences other than in apprenticeship.

One key variable used in the analyses of this sample group was year of graduation. This independent variable was cross-tabulated with most other variables in the data base to determine if any differences existed in the responses given as a function of graduation year. When statistically significant associations between variables occurred, they have been included in the discussions in this section and throughout the chapter.

3.1.1 Personal Characteristics

Table 3-1 presents selected personal characteristics of the student apprentice sample. Of the 590 individuals comprising the sample, nearly 90

percent were males, and 80 percent were white. Blacks predominated the minority races (18%), with Hispanics and American Indians representing approximately 2 percent of the sample. At the time of the follow-up interview, the respondents' ages ranged from 17 through 23 years; 70 percent of the group were either 18 or 19 years of age.

Almost all of the student apprentices graduated from high school (96%), with similar proportions of graduates found in the 1979 (42%) and 1980 (40%) classes. Of the 4 percent of the sample who did not graduate, all but one completed the 11th grade. Respondents' reasons for dropping out of high school centered around poor school performance, motivation, or absenteeism from school (57% of this subgroup) or personal circumstances, such as the need for self-support, family difficulties, pressure, or relocation (43%).

The influence of graduation year on sex and racial/ethnic composition of the group was found to be statistically significant at the .05 level. An increase in females occurred among 1979 and 1980 graduates (13% in each class), compared to 1978 graduates (3%). On the other hand, a significant decrease in minorities appeared in the more recent graduating classes. Minority races comprised 29 percent of the 1978 graduates; the percentage dropped considerably in 1979 (16%) and then increased somewhat among 1980 graduates (22%).

3.1.2 Educational Experiences

For the entire apprentice sample, performance in high school coursework, as measured by mean overall grade point average, was "B-." Virtually all student apprentices (99%) attended public high schools. Over three-fourths of the students (78%) were enrolled in a vocational/technical program of

TABLE 3-1

Selected Personal Characteristics of Student Apprentice Sample

Personal Characteristics	Percentages
Sex	
Male	89
Female	11
N	(590)
Race-Ethnic Group	
Non-minority	80
Minority	20
N	(589)
Age at Time of Interview	
17 years old	1
18 years old	30
19 years old	40
20 years old	22
21+ years old	7
N	(587)
High School Graduation Year	
Did not graduate	4
1978	14
1979	42
1980	40
N	(590)

instruction, slightly more than one-tenth (11%) in a general instruction program, with the remainder divided between academic/college preparatory (7%) and commercial/business (4%) curricula.

Of the 483 student apprentices who were engaged in vocational/technical and commercial/business programs, 80 percent reported that trade and industrial coursework (for example, auto mechanics or metal working) was the focus of their instruction. Nine percent were enrolled in a technical program, such as drafting or electronics, and the other 11 percent took coursework from such diverse instructional programs as business and office (3%), health (3%), home economics or family life (2%), and others (3%).

Among these respondents, choice of vocational program appeared to be influenced by year of graduation ($p < .05$). In each successive class, the proportion of graduates enrolled in the trade and industrial program decreased (1978--84%; 1979--80%; 1980--76%). Conversely, higher proportions of 1980 graduates were enrolled in the health, agriculture, and business/office programs.

All respondents were queried about the specific occupation for which their courses were preparing them. Table 3-2 displays the distribution of responses, organized according to the nine major occupational classifications set forth in the U. S. Department of Labor's Dictionary of Occupational Titles (DOT), Fourth Edition, 1977. Under each major classification in the table, examples of specific occupations included in that category have been provided as illustrations.

As Table 3-2 shows, the majority of respondents (54%) indicated that their courses were preparing them for machine trade occupations. Within this major classification, machinists and motorized vehicle and engineering

TABLE 3-2

Major DOT Occupational Categories for Which Student Apprentices Felt Their Courses Were Preparing Them

Major DOT Occupational Categories	Percentages
Professional, Technical, and Managerial Occupations Drafter Technician (dental, electrical, medical)	12
Clerical and Sales Occupations Secretary (legal, medical) Clerk, cashier	3
Service Occupations Food service (baker, butcher) Attendant (nurse's aid, child care)	4
Agricultural, Fishery/Forestry and Related Occupations Arborist, gardener, landscaper Fisherman	< 1
Processing Occupations Chemical/pharmaceutical processor Fish processor	< 1
Machine Trades Occupations Machinist Motorized vehicle and engineering equipment, mechanics and repairers	54
Bench Work Occupations Upholsterer Instrument repair	< 1
Structural Work Occupations Body workers Welders, cutters and related	16
Miscellaneous Occupations Film lab technician or processor	< 1
No Occupation	9
N	(584)

equipment mechanics and repairers were most frequently mentioned (18% each). Other major occupational categories for which respondents' coursework was preparing them show considerably lower percentages. Structural work occupations, such as body workers or welders and cutters, and the professional, technical, and managerial occupations were cited by 16 percent and 12 percent, respectively, of the sample. Almost 10 percent of the group reported that their coursework was not preparing them for any occupation.

Other educational experiences of the apprentice sample involved the types and quality of career information and assistance received during high school. A substantial majority of all respondents (83%) received assistance in the area of careers, preparation for work or jobs from people working in their high school. However, 93 percent of the group subsequently reported that they had been provided with information specifically on career opportunities in apprenticeship. (The highly focused language of the latter question apparently prompted improved recall by the respondents.)

Three specific items related to the quality of services and/or instruction received during high school were rated by the group: information on occupations; assistance with career planning; and instruction on how to look for a job. For each item, Table 3-3 shows that a majority of respondents felt that the quality of services and/or instruction was "good" or "excellent." By combining these two points on the rating scale, the percentage was lowest for assistance with career planning (63%) and then rose for information on occupations (69%) and instruction on how to look for a job (71%). These ratings, while not specific to apprenticeship-related services and/or instruction, reflect generally favorable opinions about the quality of career information and instruction offered through the schools.

TABLE 3-3

Opinions About the Quality of Services and/or Instruction
Received by Student Apprentices While in High School

Career Service	Percentages
Information on Occupations	
Excellent	17
Good	52
Fair	25
Poor	5
N	(589)
Assistance with Career Planning	
Excellent	22
Good	41
Fair	28
Poor	9
N	(588)
Instruction on How To Look for a Job	
Excellent	27
Good	44
Fair	20
Poor	9
N	(589)

3.1.3 Vocational Objectives During High School

Most respondents (85%) indicated that the occupations for which their coursework was preparing them did represent their specific career objective at the time. During their last 2 years of high school, 80 percent of the apprentice sample felt "very" or "somewhat certain" of their career objective, while the remaining 20 percent reported being either "somewhat" or "very uncertain" about their career choice. At the time the apprentice group left high school, a bare majority (51%) had no particular plans other than to continue in the job they held during high school. Much smaller proportions of the group said they were going to look for a job (15%) or combine school and work in some way (12%). Even fewer respondents planned to enter a training program (8%), go to school full-time (7%), enter the Armed Forces (3%), or engage in some other activity (4%).

These data on vocational certainty and specific plans upon leaving high school were significantly associated with year of graduation, as shown in Table 3-4. Vocational certainty was much stronger among 1979 and 1980 graduates than among 1978 graduates. With respect to specific plans at the end of high school, somewhat erratic increases and decreases in the percentages appeared among those whose plans were to continue in their present job. However, 1979 and 1980 graduates were much less likely to look for a job and more likely to enter a training program.

3.1.4 In-School Work Experiences

The last two topics presented in this discussion of personal and educational experiences during high school relate to participation in a cooperative education program and paid employment other than in apprenticeship.

TABLE 3-4

Vocational Certainty and Specific Plans Upon Leaving High School
by Year of Graduation

Vocational Certainty and Specific Plans Upon Leaving High School	Percentages 1978	1979	1980	Chi Square
Certainty of Career Choice in Last 2 Years of High School				
Very certain	39	49	52	
Somewhat certain	40	30	31	
Somewhat uncertain	16	14	7	
Very uncertain	5	7	10	12.95*
Specific Plans When Left High School				
No plans, continue in present job	44	55	49	
Look for a job	33	9	15	
Enter a training program	2	9	9	
Go to school full-time	5	8	7	
Enter the Armed Forces	4	1	5	
Combine school and work	10	11	13	
Other	2	7	2	44.77***
N	(82)	(246)	(239)	

*p < .05; ***p < .001.

Eighty-five percent of the sample participated in a cooperative education program, which provides for the student's early release from high school to be employed, while receiving special assistance from a teacher or coordinator. When these data were examined by year of graduation, a significant decrease ($p < .05$) in participation by each successive graduating class emerged (from 95% of the 1978 graduates to 82% of the 1980 graduates).

Approximately three-fifths of the apprentice sample (59%) reported that they had regular paid employment, other than their apprenticeship job and such occasional jobs as mowing lawns or babysitting, during high school. Among this group who were regularly employed, nearly two-thirds had held only one (32%) or two (35%) jobs, while the remaining one-third had been employed in three or more different jobs during their high school years. Thus, the apprenticeship sample exhibits a relatively high degree of work experience in addition to its student apprentice positions.

3.2 STUDENT APPRENTICESHIP EXPERIENCES

In this section, specific aspects of the experiences students had as apprentices are described. These aspects cover: (1) entry into student apprenticeship, such as respondents' awareness and knowledge about the Youth Apprenticeship Program and their motivation for entering the program; (2) characteristics of the student apprenticeship employment, including occupations entered, wages, and types of assistance received from school and project personnel; and (3) the advantages and disadvantages of being an apprentice.

3.2.1 Entry into Student Apprenticeship

As reported in the preceding section, 93 percent of the sample were provided with information on career opportunities in apprenticeship by people working in the high schools. Further investigation about awareness of the Youth Apprenticeship Program (YAP) yielded a somewhat different perspective. Just over three-fifths of the respondents (61%) first heard about the program from school personnel (an instructor, cooperative education coordinator, or guidance counselor). Of the remainder, similar proportions heard first from a YAP staff member (19%) or from some other source, such as friends, classmates, or the media (20%). These data demonstrate that both school personnel and program staff played an important role in making students aware of the opportunities available through the Youth Apprenticeship Program.

Information as to the reasons for becoming an apprentice provides insight about respondents' motivations and, in addition, may offer clues about the nature of publicity or outreach campaigns which are effective in enrolling student apprentices. Table 3-5 presents the most important reasons given by respondents for becoming apprentices. Under each major category are illustrations of the types of responses given.

As revealed in Table 3-5, two major responses predominate among the six reasons: career development or advancement (61%) and economic or vocational opportunity (20%). Within the career development/advancement category, several themes or subgroupings of reasons emerged: access to a trade; provision of training or skills improvement; interest in a career (either specific or general); and the provision of certification or credential credit

TABLE 3-5

Most Important Reasons for Entering an Apprenticeship

Reasons	Percentages
Career Development/Advancement	61
Liked field or trade	
Training, certification provided	
Economic or Vocational Opportunity/Security	20
Money, income	
Work (job) experience gained	
Learning Experience/Exploration	4
Learn new things	
See if I liked the field or trade	
Personal Sense of Worth/Independence/Enjoyment	5
Sense of accomplishment, freedom	
Like working with hands, machinery	
General--Positive	8
Experience (unspecified)	
Get something good in life	
General--Negative	2
Get out of school early	
Took up spare time	
N	(588)

related to the field. Thus, respondents spoke of the apprenticeship program as one which offers "the best way to get into a trade," of the availability of "training in all areas" of the trade or job, of being "interested in this field," or, finally, of the "certification provided" by completing the program.

Economic or vocational opportunity and security, usually related to the prospect of a good income, were mentioned by many respondents. However, the anticipation of job security, job availability, and/or work experience gained also served as strong incentives for participating in the program. Less than 10 percent of the apprentice sample were found in each of the remaining categories in Table 3-5. There were no apparent differences in reasons for entering apprenticeship as a function of graduation year.

Knowledge about important aspects of an apprenticeship position affects an individual's decision to enter the program and may influence one's retention as an apprentice. In Table 3-6, data are presented on how informed respondents perceived themselves to be with respect to five different aspects of the job, before they were employed as apprentices. The percentage of respondents who said they were "well informed" was highest for length of apprenticeship (64%), clustered in the 50th percentile for nature of the work, rate of pay, and long-term future of the job, and then dropped to 46 percent for related instruction requirements. Approximately one-third of the sample regarded themselves as "somewhat informed" on all aspects, except for length of apprenticeship (22%). These data indicate that sizeable proportions of the sample had incomplete information on various aspects of the apprenticeship jobs they intended to enter.

TABLE 3-6

Extent of Being Informed About Aspects of the Apprenticeship Job Before Being Employed as an Apprentice

Informed About Apprenticeship	Percentages
Nature of the Work	
Well informed	55
Somewhat informed	36
Not informed	9
N	(588)
Rate of Pay	
Well informed	50
Somewhat informed	34
Not informed	16
N	(588)
Long-Term Future of the Job	
Well informed	50
Somewhat informed	33
Not informed	17
N	(587)
Length of the Apprenticeship	
Well informed	64
Somewhat informed	22
Not informed	14
N	(587)
Related Instruction Requirements	
Well informed	46
Somewhat informed	35
Not informed	19
N	(586)

In terms of the person who provided the most assistance in obtaining employment in their apprenticeship occupation, nearly three-fifths of the sample (59%) identified school personnel, primarily their vocational instructor or cooperative education coordinator. Over one-fifth (21%) named YAP staff members, and the remaining one-fifth said either that they received no assistance (9%) or that some other person had provided the most assistance (11%).

3.2.2 Characteristics of Student Apprenticeship Employment

Table 3-7 shows the occupations entered as an apprentice, organized according to the major DOT occupational classifications, with specific, representative occupations listed under each major category. Three-fifths of the respondents were employed in the machine trades. Less than 20 percent entered some type of structural work. Fewer than 10 percent were employed in professional, technical, and managerial occupations. In every other major category, 5 percent or less of the group found employment as an apprentice. Significant at the .01 level was the influence of graduation year on occupation entered as an apprentice. Each successive graduating class exhibited an increased tendency to enter the professional, technical, and managerial occupations (1978--5%; 1979--6%; and 1980--11%) and the structural work occupations (4%, 20%, and 21%, respectively), and a decreased likelihood of entering the machine trades (77%, 50%, and 55%, respectively).

Two characteristics of the worksite were explored with questions about the employment of other student apprentices and presence of a union. Over one-half of the apprentice sample (53%) reported that other student apprentices were also employed at their worksite during the same time the respondents

TABLE 3-7

Major DOT Occupational Categories Entered by Student Apprentices

Major DOT Occupational Categories	Percentages
Professional, Technical, and Managerial Occupations	8
Drafter	
Technician (dental, medical, electrical)	
Clerical and Sales Occupations	3
Secretary (legal, medical)	
Auto parts clerk	
Service Occupations	5
Child care attendant	
Baker, butcher	
Agricultural, Fishery, Forestry and Related Occupations	< 1
Landscaper	
Lobster fisher	
Processing Occupations	< 1
Pharmaceutical operator	
Fish processor	
Machine Trades Occupations	61
Machinist	
Motorized vehicle and engineering equipment mechanics and repairers	
Bench Work Occupations	3
Dental lab technician	
Upholsterer	
Structural Work Occupations	17
Body workers, transportation equipment	
Welders, cutters, and related occupations	
Miscellaneous Occupations	2
Offset platemaker	
Film processor	
N	(588)

were in high school. Only 9 percent, however, worked at companies where a union represented the workers.

Table 3-8 presents data on several characteristics of the apprenticeship employment. Fewer than one-third of the apprentice group (31%) were employed as apprentices in the summer preceding their senior year. However, there was a tendency toward more student apprentices beginning their employment in the summer before their senior year with each successive graduating class ($p < .05$). The average length of time for employment as an apprentice during high school was 33 weeks. Although the respondents reported that their employment period ranged from 1 week to 3 years, it is apparent that the majority were employed for less than 1 year during their senior year of high school. While school was in session, the average number of hours worked was per week was 25. The starting hourly wage, on average, was $3.28, resulting in average total earnings of $2,563, before deductions, during high school.

The Youth Apprenticeship Project is structured such that assistance is lent to the student apprentices in the form of job-related counseling, should the individual seek it, and visits to the worksite. Table 3-9 displays data related to the types of assistance received by the student apprentices from school and project personnel.

Three-fifths of the sample did not discuss any job-related problems with staff from their high schools. A decreasing tendency to discuss such problems was apparent with each successive graduating class ($p < .05$). Among those who did counsel with school personnel, similar proportions discussed skill-related problems (34%) and work adjustment problems (37%), while over 20 percent talked about both types of problems. A substantial majority of

TABLE 3-8

Selected Characteristics of the Student Apprenticeship Employment

Characteristics of Employment	Percentages/Means
Employment as Apprentice Summer Before Senior Year	
Yes	31
No	69
N	(587)
Number of Weeks Employed During High School	
Mean	32.58
SD	22.20
N	(584)
Number of Hours Worked Per Week While School in Session	
Mean	24.81
SD	7.75
N	(583)
Starting Hourly Wage	
Mean	$3.28
SD	$0.60
N	(583)
Total Earnings Before Deductions During High School	
Mean	$2,563.00
SD	$1,936.78
N	(559)

TABLE 3-9

Types of Assistance or Support Received from School and Project Personnel While Employed as an Apprentice

Types and Sources of Assistance	Percentages
Discuss Job-Related Problems with High School Personnel	
Yes	40
No	60
N	(589)
Types of Problems Discussed	
Skill-related problems (e.g., difficulty in performing tasks required)	34
Work adjustment problems (e.g., difficulty in relationships with supervisors, co-workers)	37
Both skill-related and work adjustment problems	22
Other problems	7
N	(238)
High School Staff Usually Helpful with Problems	
Yes	84
No	16
N	(236)
Visited at Worksite by School/Project Personnel	
Yes	77
No	23
N	(589)
Who Visited at Worksite	
School personnel	30
Project personnel	48
Both school and project personnel	22
N	(450)

this subgroup seeking assistance (84%) reported that staff members were usually helpful in resolving these work problems.

While employed as apprentices, over three-quarters of all the respondents (77%) were visited at their worksites by staff from either the school or sponsoring organization. Among those who received a visit, 48 percent indicated that someone came from the organization sponsoring the Youth Apprenticeship Project, 30 percent were visited by someone from the school, and 22 percent were contacted by personnel from both sources. The likelihood of being visited increased with each successive graduating class ($p < .05$).

Those respondents who continued in their apprenticeship job following graduation from high school (78% of the sample) were asked if they had regularly attended classes or received some other form of instruction (e.g., a correspondence course) after graduation in conjunction with their apprenticeship. Fewer than 30 percent (28%) had done so.

One final topic relating to student apprenticeship experiences concerns whether or not the respondents changed their career plans and, if so, how those plans changed as a result of their being an apprentice during high school. Table 3-10 details these data from respondents and shows that only one-fifth (21%) did change their plans. This subgroup then identified up to three ways their plans had changed; the most common response (45%) was wanting some occupational trade or field other than that held as an apprentice. Others found that their career plans were affected by economic considerations (9%), usually wanting more money, or personal indecisiveness or changes (10%). However, for over one-third of this subgroup, their apprenticeship experience had the positive effect of either confirming their interest in the

TABLE 3-10

Changes in Career Plans Based on Apprenticeship Experiences During High School

Changes in Career Plans Based on High School Apprenticeship Experiences	Percentages: Changed Career Plans	Percentages: Aggregate of Three Ways Plans Changed
Changed Career Plans Based on High School Apprenticeship		
Yes	21	
No	79	
N	(589)	
Ways Career Plans Changed		
Confirmed interest/plans		18
Want similar job		
Increased interest in field, trade		
Motivated toward training/education		18
Go to college		
Want further training (school, courses)		
Changed field/job		45
Go into different field, job		
Didn't like trade, job		
Economic disincentives in trade/job		9
Want more money		
Liked field, can't afford tools		
Unspecified/uncertain plans		10
Don't know what I want to do		
Change in self (unspecified)		
N		(170)

field (18%) or increasing their motivation for training or further education (18%).

3.2.3 Advantages and Disadvantages of Student Apprenticeship

In this concluding section of the description of student apprenticeship experiences, respondents' perceptions about the most important advantage and disadvantage of being a student apprentice are reported. Tables 3-11 and 3-12, which present the data, are organized similarly. Major categories of advantages and disadvantages were derived from respondents' comments and, under each major category shown in the tables, illustrative remarks appear.

Cited more frequently by the sample than any other benefit was that the apprenticeship provides training in a trade (37%). Falling considerably below this level of frequency was the category, learning skills by direct application, mentioned by the next largest group of respondents (14%). Clustered at the 10-percent-level were three other advantages named by respondents: enhancement of career or job opportunities; economic opportunities; and finally, general positive advantage, usually simply reported as "experience." Thus, the advantages which were cited by respondents related overwhelmingly to their learning a trade, obtaining skills in the actual job setting, and enhancing their career or job opportunities, as opposed to other personal, economic, or general vocationally oriented benefits.

Turning to the most important problem or disadvantage, Table 3-12 reveals that over one-half of the respondents (53%) said there was no disadvantage! Of the remainder, more respondents identified inadequate pay, work environment, or hours worked (16%) as the primary problem. Approximately one-tenth of the sample (9%) felt that the constraints on their free time,

TABLE 3-11

Most Important Advantage of Being a Student Apprentice

Most Important Advantage	Percentages
Learning Skills by Direct Application	14
Work experience	
Learn on the job	
Career Exploration	6
Know field before full time employment	
Opportunity to change jobs if I don't like one	
Receipt of Training/Learning a Trade	37
Learn different skills	
Part-time work and school	
Enhancement of Career/Job Opportunities	10
Get a head start on career	
Certification	
Economic Opportunities	10
Get paid for learning/training	
Money	
Self-Sufficiency/Personal Awareness and Improvements	7
Self-exploration, know more about self	
Meeting people, working with people	
General--Positive	10
Experience (unspecified)	
Preparation for future	
Other	3
Get out of school	
Got me a job	
None	3
N	(585)

TABLE 3-12

Most Important Disadvantage of Being a Student Apprentice

Most Important Disadvantage	Percentages
Constraints on Free Time/School Work and Activities	9
Constraint on studies	
Missed out on school activities	
Inadequate Training/Supervision/Support	5
Lack of adequate training	
Lack of supervision	
Conflict with Employer/Boss	8
Hassle with boss, others	
Assigned "dirty" work	
Inadequate Pay/Work Environment/Number of Hours Worked	16
Not enough working hours	
No union	
Work/Responsibilities Too Difficult	1
Too hard	
Responsibilities are more than for a student	
Program Paperwork Excessive	1
Paperwork	
Too many questionnaires, too much research	
Apprenticeship Too Long/Slow Advancement	5
Advancement too slow	
Not informed about length of program	
Personal Problems/Circumstances	2
Transportation problems	
More nervous to do well in job	
None	53
N	(586)

which affected their studies and participation in school activities, posed the major difficulty. Eight percent reported that conflicts with their boss or others at the worksite, characterized as "hassles" or "dirty" work assignments, constituted the most important disadvantage. In summary, predominant in the type of disadvantages are conditions at or related to the worksite. Figures presented earlier on starting hourly wages and earnings lend some credence to the validity of complaints about pay rate and inadequate number of work hours. No apparent differences, according to year of graduation, were found for either most important advantage or disadvantage of being a student apprentice.

These data support the conclusion that a majority of student apprentices regarded their experiences favorably. That over one-half of the group (53%) reported no disadvantages connected with their apprenticeship experience is in itself impressive. In a later chapter, employers' perceptions and assessments about the student apprenticeship project will be explored and will provide a basis for comparison on some of these aspects discussed with the apprenticeship group.

3.3 POST-HIGH SCHOOL LABOR MARKET EXPERIENCES

Three major topics, relevant to the experiences of the apprentice sample in their post-high school period, are presented here: (1) employment patterns, including current job status, occupations in which employed, and earnings; (2) retention in apprenticeship; and (3) school-to-work transition problems from a retrospective viewpoint. The retention in apprenticeship discussions will attempt to integrate most of the salient aspects reported about the sample by comparing "stayers" and "leavers" in apprenticeship.

These examinations will lay further groundwork for the project assessments and impacts which appear in the following section.

3.3.1 Post-High School Employment Patterns

In terms of current employment status, over three-quarters of the apprentice sample (77%) were employed at the time of the interview. Seven percent, although not currently employed, had held some job(s) since high school, as opposed to 4 percent of the group who had not been employed at all since leaving high school. Slightly more than ten percent (11%) considered themselves to be full-time students at the time of the interview. Among those who were full-time students, a majority were seeking either a bachelor's (37%) or a post-graduate (17%) degree, approximately one-quarter (27%) an associate degree, while the remainder were pursuing some other degree (6%) or did not plan to obtain any degree (13%). There were no apparent differences in status as a student, degree aspirations, or current employment as a function of year of graduation from high school.

Less than 30 percent (28%) of those who had been employed since leaving high school had held other jobs besides their current or most recent one. Of this subgroup, most had worked at only one (53%) or two (27%) other jobs, as opposed to three or more (20%). Overall, the apprentice sample regarded their high school diploma as a terminal degree and had been in the work force fairly consistently since leaving high school.

Work-related experiences since high school influenced the career plans of less than one quarter of the sample (24%). Table 3-13 exhibits the categories and percentages for the aggregated responses of up to three ways these respondents' plans had changed, although most identified only one way. Frequently mentioned specific responses appear under the major categories.

Among those whose career plans had changed, the post-high school work-related experiences provided positive reinforcement in their chosen field for nearly one-half of the subgroup. Ten percent reported that their work-related experiences confirmed or increased their interest in the field or trade, which prompted some of these respondents to look for a more responsible job within the field and other respondents to consider starting their own businesses. Thirty-five percent experienced an increased motivation to further their education, to obtain training, or to learn other specialties within or related to their original trade, field, or occupation.

For the majority of the subgroup, however, work-related experiences produced a different result. Most decided to change to a different field, trade, or job (37%). These individuals found that their earlier career choice was unsuitable primarily because it did not match their interests, expectations, or perceived abilities. The remainder indicated that their career plans were undecided (10%) or that economic disincentives, primarily low pay, had made them reconsider their plans (8%). Overall, however, the data in Table 3-13 reveal the apprentice sample to be a relatively stable group with respect to career plans in their post-high school period.

Characteristics of their post-high school employment were elicited from members of the sample who were currently or recently employed. Those individuals who were primarily students at the time of the interview or who had not held a job since leaving high school are exluded from this discussion. Table 3-14 presents the data on respondents' current or most recent occupations, using the major DOT occupational categories and illustrating each category with specific, frequently mentioned occupations. Just under one-half of the individuals currently employed or employed since high school

TABLE 3-13

Changes in Career Plans Based on Work-Related Experiences
Among the Apprentice Sample

Changes in Career Plans Based on Work-Related Experiences	Percentages: Changed Career Plans	Percentages: Aggregate of Three Ways Plans Changed
Changed Career Plans Based on Work-Related Experiences		
Yes	24	
No	76	
N	(587)	
Ways Career Plans Changed		
Confirmed interest/plans		10
Looking for more responsible job		
Have become more interested		
Motivated toward training/education		35
Decided to further education		
Want to learn other specialties within trade		
Changed field/job		37
Want to enter another field, job		
Want to look for a better job		
Economic disincentives in trade/job		8
Try to get better pay		
Money wasn't good		
Won't finish school/college		1
Unspecified/uncertain plans		10
Undecided about which career to pursue		
Found that there wasn't much chance for advancement		
N		(177)

were in the machine trades (48%), and one-fifth had entered structural work occupations (20%). In each of the remaining occupational categories, less than one-tenth of the respondent group appeared.

These data are most interesting when compared to the figures for occupations in which respondents were actually employed as student apprentices (see Table 3-7). A decrease of 12 percent in the machine trades and 3 percent in the professional and technical occupations was evident among those currently or recently employed. A small increase of from 2-6 percent was found in four other current occupational categories: service (2%); structural work (3%); miscellaneous (4%); and clerical and sales (6%). It appears that some shift toward less technical or skilled jobs occurred among the apprentice sample in the post-high school period. This shift is attributable, in part, to that portion of the group who held other intervening jobs and to the exclusion of students and those who had not been employed since high school.

Table 3-15 displays selected characteristics of apprentices' current or most recent labor market experiences. In the occupations just discussed, the length of employment averaged 52 weeks, or 1 year, and the average number of hours worked per week was 42. With regard to pay rate, average current hourly wage equaled $4.73, compared to the average starting rate of $3.81. Current annualized earnings averaged $10,619. Table 3-15 also shows wage and income averages by year of graduation. As would be expected, 1978 high school graduates earned considerably more than graduates who had been working for a shorter period of time.

TABLE 3-14

Current or Most Recent Occupation of Apprentice Group
(Excluding Full-Time Students and Those
Not Employed Since High School)

Major DOT Occupational Categories	Percentages
Professional, Technical, and Managerial Occupations	5
Drafter	
Dental assistant	
Clerical and Sales Occupations	9
Secretary (legal, medical)	
Auto parts clerk	
Service Occupations	7
Nurse's aid	
Restaurant cook	
Agricultural, Fishery, Forestry and Related Occupations	1
Landscaper	
Lobster fisher	
Processing Occupations	1
Baker	
Chemical processor	
Machine Trades Occupations	48
Machinist	
Auto mechanic	
Bench Work Occupations	3
Pen and pencil repairer	
Metal grinder, polisher	
Structural Work Occupations	20
Auto body repairer	
Welder	
Miscellaneous Occupations	6
Gas station attendant	
Hoisting and conveying	
N	(498)

TABLE 3-15

Selected Characteristics of Apprentices' Current Labor Market Experiences

Characteristics of Current Labor Market Experiences	Percentages/Means
Employment Status	
Currently employed	77
Employed any time since high school	7
Not employed since high school	4
Full-time students	11
N	(586)
Number of Weeks Job Held	
Mean	52.44
SD	45.45
N	(496)
Number of Hours Worked Per Week	
Mean	41.52
SD	8.28
N	(491)
Starting Hourly Wage	
Mean	$3.81
SD	$1.29
N	(463)
Current Hourly Wage	
Mean	$4.73
SD	$1.50
N	(492)
Current Annualized Income	
Mean	$10,619.00
SD	$4,626.60
N	(504)
Average Current Hourly Wage by Year of Graduation	
1978	$5.89
1979	$5.02
1980	$4.04
Average Annualized Income by Year of Graduation	
1978	$13,623.00
1979	$11,001.00
1980	$9,027.00

3.3.2 Retention in Apprenticeship

At the time of the interview, over 42 percent of the respondents were still employed in their student apprentice job; 58 percent were not, with more having left that position after graduation (36%) than before (22%). Among the leavers, 62 percent said they resigned voluntarily, 8 percent were fired, 22 percent were laid off for lack of work, and the remaining 8 percent identified various other reasons for leaving. Table 3-16 presents these data according to year of graduation and reveals significant increases among more recent graduates in retention status and in leaving the job because of lack of work or other reasons. Conversely, a decrease occurred in those who resigned voluntarily or were fired.

Excluding those respondents who were laid off or fired, most former apprentices left because of inadequacies in the work conditions or general dissatisfaction with the job. More specifically, Table 3-17 shows that over one-quarter of this subgroup (26%) cited inadequate or poor pay, benefits, work environment, or number of hours worked as the most important reason for leaving. Eight percent felt that the training or opportunity for advancement was too limited. Nearly 20 percent left because they were dissatisfied with their job or trade, and another 10 percent said conflict with their employer or boss was the primary reason for leaving. No differences were apparent in reasons for leaving the apprenticeship position as a function of graduation year.

Table 3-18 presents selected personal and educational characteristics of the apprentice sample found to be significantly associated with retention status. These data can be summarized as follows:

TABLE 3-16

Retention Status and Manner in Which Left Apprenticeship Job by Year of Graduation

Retention and Manner in Which Left Job	Percentages 1978	1979	1980	Chi Square
Retention in Apprenticeship Job				
Still employed in job	24	37	55	
No longer employed in job	76	63	45	
N	(82)	(246)	(239)	29.35**
Manner in Which Left Job				
Resigned voluntarily	71	65	55	
Fired	13	6	6	
Laid off for lack of work	13	19	29	
Other	3	10	10	
N	(62)	(156)	(108)	13.08*

*p < .05; **p < .01.

TABLE 3-17

Most Important Reason for Leaving Apprenticeship Position Among Those Who Resigned or Left for Other Reasons

Resignation or Other Reason for Leaving Job	Percentages
Other Employment Found	10
Another job offer	
To join Armed Forces	
Inadequate Training/Opportunity for Advancement	8
Not learning enough	
Limited opportunity for advancement	
Conflict with Employer/Boss	10
Didn't get along with boss/supervisor	
Boss expected too much	
Inadequate or Poor Pay/Benefits/Work Environment/ Number of Hours Worked	26
Wanted more money	
Wanted better benefits	
Dissatisfaction with Job/Trade	19
Didn't meet my expectations	
Wanted a better job	
Business Problems	5
Company went out of business	
Periods of lay off	
Program Ended	7
School ended	
Not offered any longer	
General Self-Improvement	8
To attend college/take courses	
To better myself (unspecified)	
Personal Problems/Circumstances	7
Physical health problems/pregnancy	
Transportation problems	
N	(243)

- Stayers were more likely than leavers to be from the non-minority, rather than minority, racial/ethnic group and to be high school graduates;

- Stayers, as opposed to leavers, showed a greater likelihood of taking a trade and industrial program of instruction in high school, and a lesser likelihood of being involved in technical and other instructional programs;

- Stayers were much more certain of their career choice during the last 2 years of high school than were leavers;

- With respect to specific plans at the end of high school, stayers were markedly more committed to continuing in their present jobs. Compared to leavers, they were not nearly as likely to look for a job or, to a lesser degree, to go to school full-time; and

- Finally, stayers exhibited a much stronger likelihood of "not at all" changing their career goals since high school, while leavers were more likely to find that their goals had changed to a "moderate" or "great" extent.

Cross-tabulations between retention status and variables related to the student apprenticeship experiences yielded only a few significant findings. First, the better informed the students were about the long-term future of the apprenticeship job before their employment, the greater the likelihood that these individuals stayed in the position ($p < .01$). Second, leavers were much more likely than stayers to seek help for apprenticeship-related problems from high school staff and to change their career plans based on their student apprenticeship experiences ($p < .001$). Third, more stayers than leavers (34% vs. 21%) engaged in some form of apprenticeship-related instruction after graduation from high school ($p < .01$). Fourth, disadvantages of being a student apprentice were found to be associated with retention status at the .05 level. The major differences were that stayers were less likely than leavers to report conflicts with a boss or supervisor (3% vs. 11%) and more likely to say there were no disadvantages (59% vs. 48%).

TABLE 3-18

Selected Personal and Educational Characteristics of the Apprentice Sample by Retention as an Apprentice

Personal and Educational Characteristics	Percentages		Chi Square
	Stayers	Leavers	
Race-Ethnic Group			
Non-minority	85	76	
Minority	15	24	
N	(245)	(344)	7.19**
High School Graduate			
Yes	98	95	
No	2	5	
N	(246)	(344)	5.20*
Vocational Program of Instruction			
Trade and industrial	84	76	
Technical	6	11	
Business/office	4	2	
Other	6	11	
N	(203)	(280)	10.43*
Certainty of Career Choice			
Very certain	57	41	
Somewhat certain	31	33	
Somewhat uncertain	7	15	
Very uncertain	5	10	
N	(246)	(344)	20.55***
Specific Plans When Left High School			
No plans, continue in present job	67	40	
Look for a job	4	23	
Enter a training program	9	6	
Go to school full-time	4	10	
Enter the Armed Forces	2	3	
Combine school and work	12	13	
Other	2	5	
N	(246)	(344)	64.66***
Extent to Which Career Goals Have Changed Since High School			
Not at all	47	25	
Very little	13	15	
To some extent	15	16	
To a moderate extent	11	19	
To a great extent	13	25	
N	(246)	(344)	36.99***

*p < .05; **p < .01; ***p < .001.

Several post-high school employment variables were strongly influenced by retention status. Table 3-19 displays these data on change in career plans, student status, employment status, and current or most recent occupations held. Twice as many leavers as stayers reported that their career plans had changed as a result of work-related experiences following high school, and three times more leavers than stayers identified themselves as full-time students at the time of the interview. With respect to being currently employed, virtually all the stayers (99%) held jobs at the time of the interview, compared to three-quarters (76%) of the leavers. Current or most recent occupations were characterized by higher retention in the machine trades and lower retention in the clerical and sales, service, and miscellaneous occupations.

3.3.3 School-to-Work Transition

One hypothesis formulated in the study design postulates that the types of school-to-work transition problems experienced by the apprentice sample would differ from those experienced by the comparison group. This presumed difference is based first on the fact that apprentices are placed in a job during school which may be retained after graduation from high school, thereby reducing the pressures related to the immediate future. Second, given the nature of the Youth Apprenticeship Project, guidance and support are extended to the students through school by project personnel, which may help ameliorate individuals' uncertainty with respect to career choices and interests. In the following discussions, the high school courses which proved most beneficial in making the school-to-work transition and the types of transition problems experienced by the sample are examined.

TABLE 3-19

Selected Post-High School Employment Experiences
by Retention as an Apprentice

Selected Post-High School Experiences	Percentages		Chi Square
	Stayers	Leavers	
Changed Career Plans Based on Work-Related Experiences			
Yes	15	30	
No	85	70	
N	(245)	(342)	18.17***
Primarily a Student Now			
Yes	5	16	
No	95	84	
N	(246)	(343)	18.64***
Currently Employed			
Yes	99	76	
No	1	24	
N	(235)	(291)	55.39***
Current or Most Recent Occupation			
Professional, technical, and managerial	6	5	
Clerical and sales	3	13	
Service	4	10	
Machine trades	60	37	
Structural work	19	20	
Miscellaneous	4	9	
Other occupational groups	4	6	
N	(234)	(264)	45.77***

*** $p < .001$.

Table 3-20 presents the aggregated data for the three high school courses named by the apprentice sample as most beneficial in making the transition from school to work. Those specific courses mentioned most often are listed, in descending order of frequency, under each major course category. Over one-quarter of the sample (27%) indicated that trade and industrial courses were most beneficial in their transition. Machine shop and auto mechanics were mentioned more frequently than any of the other courses within this major category. Slightly fewer than one-quarter of the respondents (24%) identified mathematics as the most beneficial course; nearly all of this group simply said math (unspecified), as opposed to calculus, algebra, geometry, etc. Less than one-fifth (17%) reported that language arts, specifically English, proved most helpful in their transition. Just under 10 percent (9%) indicated that their technical courses were most beneficial. Relatively few respondents mentioned courses in each of the remaining categories.

Based on their experiences since high school, all respondents identified the most important problem that they encountered in making the change from being a student to being a worker. Among the entire sample, about three-eighths (36%) said they had no major problems. The remainder (64%) provided a variety of answers, which have been grouped into the major categories shown in Table 3-21. The ensuing discussion will concentrate first on the problems identified by the entire group and then on differences according to graduation year.

Among the respondents who reported school-to-work problems, over one-third (34%) indicated that the adjustment to personal independence and new or added responsibilities characterized their most important problem.

TABLE 3-20

High School Courses Which the Apprentice Group Felt Were Most Beneficial in the School-to-Work Transition

High School Courses Most Beneficial	Percentages
Business/Office	6
Business, general	
Typing	
Home Economics/Family Life	1
Technical	9
Drafting	
Mechanical drawing	
Electrical	
Trade and Industrial	27
Machine shop	
Auto mechanics	
Woodshop	
Printing	
Metalshop	
Trade and industrial	
Auto body	
Shop, unspecified	
Other Vocational/Technical	5
Co-op, unspecified	
Vocational, unspecified	
Language Arts	17
English	
Mathematics	24
Math, unspecified	
Physical and Biological Sciences	5
Science, unspecified	
Social Sciences	3
Other	2
None	1
N	(1,557)

Included in this category were comments related to being on one's own, to "facing the world," and to being responsible for personal or co-workers' safety in the workplace. Nearly one-quarter of the group (23%) identified time management as being the most important problem they faced. Difficulties in adjusting to the routine and the particular hours of work, in working full-time, and in being on time to work were frequently mentioned by these respondents. Relatively low percentages appeared in each of the remaining categories in Table 3-21. Clustering at or near the 10-percent-level were schooling inadequate or different (11%), the lack of experience or training (10%), and attitude toward work (9%).

School-to-work transition problems were influenced by year of graduation. More recent graduates showed a greater tendency to identify problems related to time management, lack of experience or training, and schooling inadequate or different. They also seemed less likely to report the types of personal adjustment problems resulting from newly assumed independence or greater responsibility and their own immaturity or indecisiveness.

A series of cross-tabulations revealed that most important transition problem was significantly associated, at the .05 level, only with career assistance from high school personnel. Slightly higher proportions of those who had received assistance, compared to those who had not, reported that attitude regarding work (7% vs. 4%) and personal independence and responsibility (35% vs. 29%) constituted their most important transition problems. However, a lower proportion of those who had received help said lack of experience or training (11% vs. 22%) posed their major transition difficulty. These data suggest that personal problems and insecurities, rather than

TABLE 3-21

Most Important Problems in School-to-Work Transition
By Year of Graduation

Most Important Transition Problem	Percentages			
	1978	1979	1980	Total
Relations with Adults Age, authority Not being recognized	5	7	1	5
Time Management/Reliability Adjusting to routine Hours of work	14	23	28	23
Attitude Toward Work Lack of freedom Physical labor	12	7	10	9
Lack Experience/Training Following instructions Finding right job	2	11	12	10
Schooling Inadequate/Different Don't see classmates/friends School doesn't prepare	5	15	10	11
Economic Burdens/Job Opportunity More bills Financial obligations	5	7	6	6
Immaturity/Indecisiveness Fear of making mistakes No more guessing	7	1	<1	2
Independence/Responsibility Change in lifestyle Making a success in life	50	28	33	34
N	(58)	(163)	(144)	(380)

Chi-square equals 34.57 with 14 degrees of freedom; $p < .01$.

skill-related difficulties, were more likely to prompt individuals to seek career-related assistance from high school personnel.

3.4 PROGRAM ASSESSMENTS AND IMPACTS

This section of the chapter presents data related to program assessments and impacts, e.g., (1) program evaluations, which include recommendation of apprenticeship to repondents' friends and program success in facilitating the school-to-work transition, and (2) job satisfaction ratings on six different items. A comparison of satisfaction ratings appears for respondents who no longer hold their apprenticeship job and those who are still employed in their original apprenticeship position.

3.4.1 Program Evaluation

Table 3-22 displays the distribution of responses to the two program evaluation items according to current retention as an apprentice. Nearly all of the apprentice sample (96%) said they would recommend apprenticeship to a friend. Stayers were more inclined than leavers to recommend apprenticeship to a friend ($p < .05$).

One of the objectives of the Youth Apprenticeship Project has been to help students make the school-to-work transition. Most respondents felt that the demonstration was "very successful" (64%) or "somewhat successful" (30%) in accomplishing this goal. When examined in light of retention status, however, a significantly higher proportion of stayers rated the project as "very successful."

3.4.2 Job Satisfaction

Job satisfaction ratings on six different items were elicited from members of the apprentice sample. Table 3-23 presents these ratings for two

TABLE 3-22

Program Evaluations from Apprentice Sample
by Retention as an Apprentice

Program Evaluations	Percentages		Chi Square
	Stayers	Leavers	
Recommend Apprenticeship to a Friend			
Yes	98	95	
No	2	5	
N	(246)	(344)	5.20*
Project Success in School-to-Work Transition			
Very successful	76	56	
Somewhat successful	19	37	
Not very successful	4	6	
Very unsuccessful (a failure)	1	1	
N	(246)	(344)	24.25***

*p < .05; ***p < .001.

distinct respondent groups. The first group includes those individuals who had left their apprenticeship position at the time of the interview (58% of the entire sample). These respondents were asked to rate their satisfaction with their previously held apprenticeship job. The second group consisted of all individuals in the sample, except those who had not been employed since high school (94%). They rated their current or most recently held job. This second group, then, includes persons still employed in their apprenticeship job who were rating that position, and persons employed or recently employed in another job who were rating the nonapprenticeship job. In Table 3-24, the current job satisfaction ratings are presented to show the differences between apprenticeship job holders and others.

Two major points emerge in comparing the data from Table 3-23. The first is that satisfaction levels ("very satisfied" and "satisfied") for those rating their former apprenticeship job were from 9 to 15 percentage points below the levels for those who rated their current or most recent job. Second, the rank order of the six aspects, according to ascending levels of satisfaction, was the same in both groups. Thus, in both groups, fewer respondents were satisfied with opportunity for advancement (61% and 76%) than with any other aspect; among those who had left apprenticeship, 15 percent fewer were satisfied. Then, increasing percentages of both groups were satisfied with rate of pay (64% vs. 77%), recognition for doing a good job (73% vs. 86%), supervision (79% vs. 91%), on-the-job instruction (83% vs. 92%), and, finally, sense of accomplishment on the job (84% vs. 93%).

The job satisfaction items for both groups were cross-tabulated with year of graduation. No differences for any of the six aspects were apparent in the group rating their previously held apprenticeship job. In the group

TABLE 3-23

Level of Satisfaction with Aspects of Former Apprenticeship Job and of Current or Most Recent Job

Job Satisfaction Items	Percentages: Former Apprentices Rating Apprenticeship Job Only	Percentages: All Employed Since High School Rating Current or Most Recent Job
Rate of Pay		
Very satisfied	6	17
Satisfied	58	60
Dissatisfied	27	19
Very dissatisfied	9	4
N	(343)	(557)
Opportunity for Advancement		
Very satisfied	14	26
Satisfied	47	50
Dissatisfied	30	19
Very dissatisfied	9	5
N	(343)	(555)
Supervision		
Very satisfied	23	31
Satisfied	56	60
Dissatisfied	15	6
Very dissatisfied	6	3
N	(343)	(555)
Recognition for Doing a Good Job		
Very satisfied	21	34
Satisfied	52	52
Dissatisfied	16	10
Very dissatisfied	11	4
N	(343)	(556)
On-the-Job Instruction		
Very Satisfied	32	36
Satisfied	51	56
Dissatisfied	11	7
Very dissatisfied	6	1
N	(343)	(555)
Sense of Accomplishment in the Job		
Very Satisfied	32	42
Satisfied	52	51
Dissatisfied	11	6
Very dissatisfied	5	1
N	(343)	(555)

rating their current or most recent job, only rate of pay was significantly associated with year of graduation ($p < .05$). An inverse association existed between these two variables; that is, the proportions of those who were "very satisfied" and "satisfied" with rate of pay tended to decrease among more recent graduates (1978--83%; 1979--76%; 1980--79%).

Table 3-24 presents the current or most recent job satisfaction data, comparing ratings made by the stayers and the leavers. For three of the six aspects analyzed, significant differences were found. The data reveal that, compared to leavers, stayers were likely to be somewhat less satisfied with rate of pay and more satisfied with supervision. With regard to sense of accomplishment in the job, stayers show a much stronger likelihood than leavers of being "very satisfied."

3.5 MULTIVARIATE MODEL OF RETENTION IN APPRENTICESHIP

Another way of looking at the influences of critical variables and outcomes for the participants who stayed with their apprenticeships is to apply the multivariate statistical procedure of path analysis.[1] Path analysis is a version of multiple regression that adds variables to the equation in a specified order. This permits the investigator to estimate not only the total influence of a given variable on a given outcome, but also to estimate the extent to which that influence is exerted directly versus being mediated

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[1]For an overview of path analysis see D. F. Alwin and R. M. Hauser, "The Decomposition of Effects in Path Analysis." American Sociological Review, 40 (1975); J. Anderson and F. Evans, "Causal Models in Educational Research: Recursive Models." American Educational Research Journal, 11 (1974); H. M. Blalock, Jr., Causal Inference in Nonexperimental Research (Chapel Hill, N.C.: Univ. of North Carolina Press, 1961); and O. D. Duncan, Introduction to Structural Equation Models (New York: Academic Press, 1975).

TABLE 3-24

Current or Most Recent Job Satisfaction Ratings
by Retention as an Apprentice

Current or Most Recent Job Satisfaction Item	Percentages		Chi Square
	Stayers	Leavers	
Rate of Pay			
Very satisfied	12	22	
Satisfied	63	58	
Dissatisfied	20	17	
Very dissatisfied	5	3	
N	(242)	(315)	10.41*
Opportunity for Advancement			
Very satisfied	26	26	
Satisfied	54	47	
Dissatisfied	16	21	
Very dissatisfied	4	6	
N	(241)	(314)	4.73
Supervision			
Very satisfied	30	33	
Satisfied	65	56	
Dissatisfied	2	9	
Very dissatisfied	3	3	
N	(242)	(313)	10.99**
Recognition for Doing a Good Job			
Very satisfied	35	33	
Satisfied	50	55	
Dissatisfied	11	8	
Very dissatisfied	4	4	
N	(242)	(314)	2.20
On-the-Job Instruction			
Very satisfied	38	34	
Satisfied	53	59	
Dissatisfied	7	7	
Very dissatisfied	2	<1	
N	(242)	(313)	2.96
Sense of Accomplishment in the Job			
Very satisfied	50	36	
Satisfied	44	57	
Dissatisfied	5	6	
Very dissatisfied	<1	<1	
N	(242)	(313)	12.00**

*p < .05; **p < .01.

through intervening variables. Like all multiple regression procedures, path analysis also yields estimates of how much influence a given variable has when all the other variables are controlled.

Path analysis was used with the apprentice sample to examine the influence of persistence in an apprenticeship on selected outcomes. The particular analysis used in this examination was a simple, fully recursive model for the effects of persistence. Figure 3-1 presents a diagram summarizing the path analysis model used to examine various outcomes which have been suggested as a result of the preceding analyses.

Persistence in apprenticeship was treated as a dummy variable in which scores of 1 were assigned to apprentices in their initial apprenticeship positions. Scores of 0 were assigned to others, i.e., those who left their apprenticeship jobs. The dummy variable, "persistence in apprenticeship," was analyzed as an intervening variable that mediated the effects of the following background characteristics:

- Sex: Scores of 1 were assigned to males and scores of 0 to females;
- Age: Scores were simply the ages of students in years;
- Race: Scores of 1 were assigned to nonminorities and scores of 0 to minority participants;
- Co-op Students: Scores of 1 were assigned to students who participated in high school cooperative education programs and scores of 0 to others;
- Graduation Year: Scores of 3 were assigned to students who were graduated from high school in 1978, scores of 2 to students who were graduated in 1979, and scores of 1 to students who were graduated in 1980;
- High School Grades: Scores from 1 to 8 were assigned to categories from "D or below" to "A or A+" that students used to report their overall grade point average in high school;

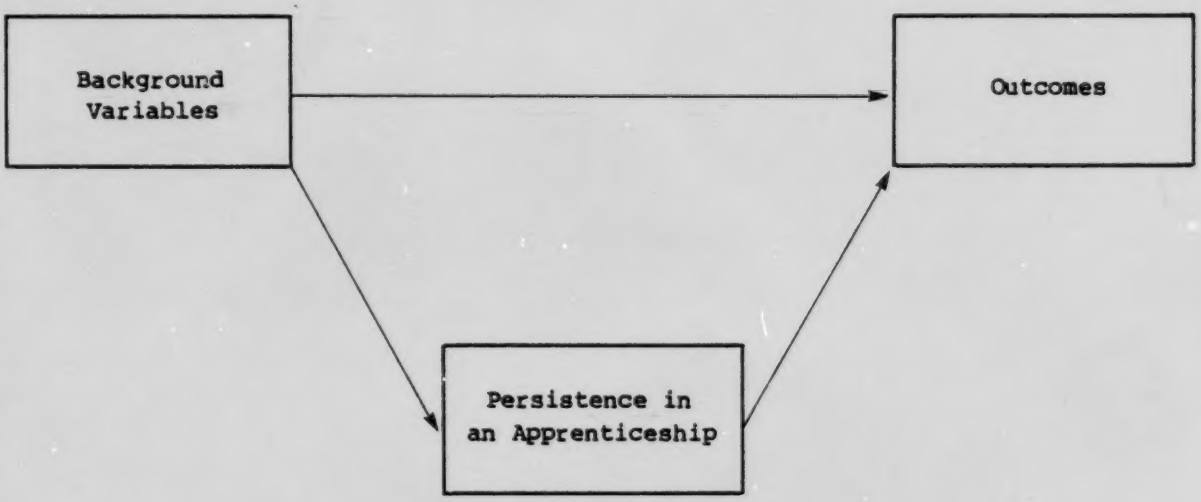

Figure 3-1

Diagram Summarizing Path Analysis Model for Analyzing the Effects of Persistence in Apprenticeship Positions Held During High School.

- High School Career Assistance: Scores were based on participant responses to the question, "Did you receive any assistance from people working in your high school in the area of careers, preparation for work or jobs?" Scores of 1 were assigned to "Yes" answers and scores of 0 to "No" answers;

- High School Apprentice Information: Scores of 1 were assigned to participant "Yes" responses and scores of 0 to "No" responses to the question, "At any time was information provided on career opportunities in apprenticeship?";

- Likelihood of College: This variable involved a three-category scale ranging from 0 to 2. Participants receiving the highest score both had taken a college preparatory curriculum in high school and had expected to become full-time students at the end of high school; and

- Starting Apprenticeship Wages: Scores were simply the dollars per hour that the YAP participants received when they began their student apprenticeships in high school.

Three outcome variables were analyzed in the path analysis model. These included:

- Annualized Income: This variable was the total projected income in dollars that participants could expect to earn in a year given their current hourly wage, income from other work, and the number of hours they worked each week;

- Job Satisfaction: This variable was the sum of responses to the six individual job satisfaction items related to the respondents' current or most recent occupation. On a Likert scale, job satisfaction scale scores could range from 6 to 24; and

- Job Performance: This variable was the sum of job supervisors' ratings of the apprentice on ten work performance items collected with the employer interview schedule. On a Likert scale, these external measures of job performance could range from 10 to 40. The variable, job performance, in many ways could be viewed as the most important single outcome of YAP participation.

Table 3-25 summarizes the results of these path analyses. The entries in Table 3-25 are metric (i.e., "raw score" or "unstandardized") regression coefficients. These coefficients appeared to be most appropriate for the present study because they tell how much of a gain on the various outcomes was produced by participating in an apprenticeship. The conventional test

of statistical significance in path analytic studies is whether or not the metric regression coefficients are at least twice their standard error. It should be emphasized that the data from this study necessarily were obtained from a relatively weak quasi-experimental design. Therefore, these analyses should be regarded as "process" analyses rather than "causal" analyses, and the various regression coefficients should be interpreted more as "influences" than as "effects." To improve clarity, Table 4-13 shows only the total and direct influences of various variables on the outcomes. These values were computed according to the standard path analytic procedures. Indirect, or mediated, influences can be calculated by subtracting the direct influences from the total influences.

Also to improve clarity, the various analyses reported here in Table 3-25 omit the residual, or error, influences that would be required in a report for a journal. These error influences are direct, inverse functions of the multiple correlation coefficients between all influencing variables and outcomes, however, and multiple correlations in this table, although rather low by absolute standards, are roughly in the expected range for path analytic studies in education, sociology, or psychology.

The most notable trend in the analyses was the positive influence of apprenticeship persistence on job performance. The stayers in apprenticeship improved their performance by four full units over non-persisters, i.e., apprenticeship leavers. It should be emphasized, however, that ambiguities remained in the path analysis results. It could not be determined from the present data, for example, whether persisters performed better because they persisted or persisted because they performed better. Nevertheless, the results did provide persuasive evidence that persistence is associated with

TABLE 3-25

Metric Regression Weights Summarizing Effects of Various Characteristics on Outcomes for Apprentices

Effect of	Job Performance (N=259)		Annualized Income (N=471)		Job Satisfaction (N=471)	
	Total	Direct	Total	Direct	Total	Direct
Sex	-0.729	-1.183	3061.94*	2620.65*	-.126	-.161
Age	1.108	0.809	-137.73	44.41	.305	.335
Race	1.976	1.621	-129.78	-46.34	.556	.577
Co-op Student	-1.875	-1.687	-596.38	-387.22	-.997*	-.978*
Graduation Year	-2.410*	-1.453	2308.15*	2231.27*	-.225	-.278
High School Grades	0.536	0.431	124.44	99.52	.123	.126
High School Career Assistance	0.825	0.968	-91.68	233.36	-.186	-.143
High School Apprentice Information	-0.825	-1.111	219.05	745.53	.423	.466
Likelihood of College	0.092	0.796	-24.80	144.12	-.554	-.559
Starting Apprentice Wage	-0.078	-0.262	1839.20*	1835.34*	.196	.201
Persistence in Apprenticeship	4.000*	4.000*	132.09	132.09	-.150	-.150
Multiple R	.361		.451		.176	

*Weight at least twice its standard error.

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better performance. On the other hand, persistence exerted small, nonsignificant influences on annualized income and job satisfaction.

When annualized income was used as the outcome measure, the sex of the apprentice, the apprentice's year of graduation, and the hourly wage when the apprentice started his/her student apprenticeship were all more predictive of annualized income than persistence in apprenticeship. Persistence in apprenticeship had a positive but nonsignificant influence on annualized income. In other words, being male, having worked longer, and having started at a higher wage are the main influences on annualized income.

The only factor which had a significant influence on the outcome variables of job satisfaction was whether or not the YAP participant was a cooperative education student in high school. Interestingly, this influence was in a negative direction. In other words, respondents who had been in cooperative education programs tended to be less satisfied with their current or most recent jobs than those persons who did not participate in co-op programs.

In summary, the results of these path analyses suggest three important aspects about outcomes of the demonstration program. First, the apprentices who are rated as better job performers by their job supervisors are tending to remain in the apprenticeship positions started in high school. Second, the three effects of sex, the length of time out of high school, and starting hourly wages as an apprentice were the strongest determinants of annualized income. Third, few background characteristics appeared to have much influence on the respondents' reported level of job satisfaction regarding a current or most recent job. The only exception was status as a cooperative education student during high school, which negatively influenced the overall job satisfaction measures.

CHAPTER 4: APPRENTICE-COMPARISON STUDY OF PROGRAM IMPACTS

This chapter of the report presents the findings of impacts assessed by the use of a constructed control group as a base for comparison with participants, i.e., the student apprentices. The chapter consists of four sections: (1) a brief introduction to the apprentice-comparison research design; (2) a description of the personal characteristics and educational experiences of the student apprentices and comparisons; (3) an analysis of differences between the program participants and comparisons on their post-high school labor market experiences; and (4) a multivariate analysis (path analysis) of program participation influences on selected outcome variables.

4.1 OVERVIEW OF COMPARISON DESIGN

An integral part of the overall Phase II research design involved the use of a constructed control group in order to assess the net impacts of student participation in the YAPs.[1] Non-apprenticed students from the high school class years of 1979 and 1980 were selected to be reasonably similar to the student apprentice group, except that they were not participants in the Youth Apprenticeship Demonstration. The most important aspects of the apprentice-comparison design related to determining whether the post-high school labor market experiences of program participants were significantly different from the non-participants and whether certain program impacts might be inferred from such differences.

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[1]See Chapter 2: Methods, for a more thorough description of the research design and sampling procedures.

Special effort was given to both the selection of the constructed control group and to quality control procedures in data reduction. Respondents who fell "outside" the overall intervention model of the Youth Apprenticeship Demonstration were excluded in the data analysis. For example, both the student apprentices and the comparisons who still were enrolled in high school or who had dropped out of school were excluded from analyses related to program impacts.[2] This procedure in editing the data, plus the matching strategy used in selecting the comparison sample, was viewed as a fairly rigorous test to determine net program impacts on student apprentices. Nonetheless the constructed control group should not be viewed as a control group in a strictly experimental sense. Therefore, differences between the student apprentice group and the comparison group sometimes may be attributable to selection factors and to variables other than program participation or nonparticipation.

4.2 PERSONAL CHARACTERISTICS AND EDUCATIONAL EXPERIENCES OF APPRENTICE AND COMPARISON SAMPLES

This section examines the characteristics and experiences of the apprentice and comparison samples prior to high school graduation. Such characteristics, of course, might affect the post-high school labor market experiences of the respondents. Separate subsections offer analyses related to:

(1) personal characteristics of the student apprentice and comparison groups;

(2) educational experiences and career viewpoints of the two groups;

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[2]Selection of the apprentice and comparison samples was based upon high school class year. As might be expected, some respondents were not graduated with their class or dropped out of school before graduation. Thus, these respondents were excluded from the comparison study.

and (3) in-school work experience characteristics of the program participants and the constructed control group.

4.2.1 Personal Characteristics

Table 4-1, following, presents a comparison of selected personal characteristics of the apprentice and comparison samples. No statistical differences are evident between the groups of student apprentices and comparisons with regard to their sex, minority status, or their ages at the time of the interview.

Eighty-seven percent of both the program participants and the constructed control group were male and 13 percent were female. Also, the distributions with regard to minority status were nearly identical. Of the apprentice sample, 81 percent consisted of non-minority respondents, compared to 80 percent nonminority for the comparison group. Finally, despite some variation in the age distribution of the two groups at the time the interview was conducted, the differences were not statistically significant. Part of this variation in age can be attributed to the fact that relatively more 1980 high school graduates from the comparison group responded to the interview.

In general, therefore, examination of selected personal characteristics of the apprentice and comparison groups indicated a fairly high degree of similarity between the two samples on basic demographic characteristics.[3] Thus, differences found between the apprentice and comparison groups on programmatic variables are not likely to be due to demographic differences between the groups.

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[3]Comparison students were selected on a matching basis with student apprentices according to sex and minority status, but not specifically according to age.

TABLE 4-1

Selected Personal Characteristics of Apprentice and Comparison Samples

Characteristic	Percentage		Chi Square
	Apprentice	Comparison	
Sex			
Male	87	87	
Female	13	13	
N	(478)	(433)	0.01
Minority Status			
Minority	19	20	
Non-minority	81	80	
N	(477)	(433)	0.29
Age at Time of Interview			
18 years of age or less	35	39	
19 years of age	46	42	
20 years of age	16	16	
21 years of age or more	3	3	
N	(478)	(433)	2.10

4.2.2 Educational Experiences of Apprentice and Comparison Samples

Table 4-2 compares the student apprentice and constructed control group on selected high school experiences in relationship to educational programs. No differences were evident between the apprentices and comparison samples in the high school curricula in which they were enrolled or in the vocational programs they participated in during high school. The majority of both the apprentices and comparisons (78% vs. 72%) were enrolled in a vocational-technical curriculum while attending high school and the vocational program was largely in the trade and industrial area (79% vs. 75%).

Although not included in any other analyses presented in this chapter, the percentage of high school graduates from the apprentice sample and comparison sample has been provided at the end of Table 4-2. Ninety-six percent of both groups were graduated from high school. Slightly more of the subjects in the comparison sample were 1980 high school graduates, but the overall distribution by graduation status and graduation year were not significantly different. However, when high school dropouts were excluded from the chi-square analysis, differences between the apprentice and comparison sample by year of graduation were marginally significant ($p < .05$). The comparison sample, therefore, contained a larger proportion of 1980 graduates. Both the student apprentice and comparison groups almost exclusively (99%) attended public high schools.

TABLE 4-2

Selected High School Educational Program Experiences of

Student Apprentice and Comparison Samples

Educational Experience	Percentage		Chi Square
	Apprentice	Comparison	
High School Curriculum			
Academic/college preparatory	7	9	
Commercial/business	4	5	
Vocational/technical	78	72	
General/other	11	14	
N	(477)	(431)	5.57
Vocational Program in High School			
Trade and industrial	79	75	
Technical	9	11	
Business and office	3	6	
Other	9	8	
N	(390)	(329)	7.44
High School Graduate			
Did not graduate	4	4	
1979 high school graduate	48	42	
1980 high school graduate	48	54	
N	(500)	(453)	3.98

Table 4-3 presents the major DOT categories for the occupations that the apprentice and comparison sample reported that they were preparing for in high school. Because of the few occupations reported in the processing, agricultural, and benchwork (DOT) categories, these occupations were collapsed into a single category, "other occupational groups," to meet the minimum specifications for a chi-square test. The apprentice and comparison groups reported significantly different occupational areas of preparatory training in high school. The largest difference between the two groups was most evident in the machine trades category, with 51 percent of the apprentices reporting this occupational area vs. 42 percent of the constructed control group. This difference appears largely balanced by the higher proportion of the comparison sample reporting occupations in the clerical and sales category (7% for the comparison group vs. 3% for apprentices) and in the miscellaneous occupations category (16% vs. 9% for comparisons and apprentices, respectively).

The apprentice and comparison samples exhibited several other different aspects in their high school experiences. For example, the apprentice group reported higher overall high school grade point averages (in general, a solid B average for the apprentices and a B minus average for the comparison sample). The differences, although not large in an absolute sense, nonetheless were statistically significant ($p < .001$). Thus, as indicated by high school grade point average, the student apprentice group tended to be somewhat better in high school achievement than the comparison group. Higher grade point averages for the student apprentice group may have represented a selection factor in program student recruitment.

TABLE 4-3

Collapsed Major DOT Categories of Reported Occupations

Prepared for in High School for Apprentice and Comparison Samples

Educational Experience	Percentage	
	Apprentice	Comparison
Professional, Technical, Managerial Occupations Drafter Technician (dental, medical)	14	12
Clerical and Sales Occupation Secretary (legal/medical) Clerk (stockroom)	3	7
Service Occupations Food service Child care attendant	4	4
Machine Trades Occupations Machinist Auto mechanic	51	42
Structural Work Occupations Body worker Welders, cutters, and related	18	18
Miscellaneous Occupations Film lab technician	9	16
Other Occupational Groups	1	1
N	(478)	(433)

Chi-square within 6 degrees of freedom = 19.54; $p < .01$.

One other important factor that distinguished the apprentice from the constructed control group during high school relates to the degree of vocational certainty and whether information or apprenticeship was provided in the high schools. Table 4-4 presents selected data on career information and career decision variables between the apprentice and constructed control group.

A larger proportion of the student apprentice group than of the comparison group reported that their high school was preparing them for an occupation which was their career objective (88% vs. 82% for apprentices and comparisons, respectively). Thus, the student apprentices tended to view their occupational training in high school to be more in line with their career objectives. In terms of high school assistance provided in careers and information provided on apprenticeship during high school, the apprentice group tended to respond more affirmatively. Eighty-four percent of the apprentice respondents reported receiving high school assistance in careers and 93 percent reported receiving information on career opportunities in apprenticeship. The corresponding percentages on the same items for the comparisons were 75 percent and 70 percent, respectively. These differences, in particular, may reflect the different proportions of apprentices and comparisons who participated in cooperative education programs, a factor to be discussed in the following section.

Significant differences ($p < .001$) were found between the apprentice and constructed control groups on their degree of certainty about their career choice while in high school. Over half of both the apprentice and comparison group respondents reported that they were "very certain" or "somewhat certain" about their career choices during high school (81%

TABLE 4-4

Selected Aspects of Careers and Career Assistance in High School for Apprentice and Comparison Samples

Characteristic	Percentage		Chi Square
	Apprentice	Comparison	
Occupation Prepared for in High School Was Career Objective			
Yes	88	82	
No	12	18	
N	(462)	(413)	6.22*
High School Assistance Provided in Careers			
Yes	84	75	
No	16	25	
N	(478)	(432)	10.00**
Received Information on Apprenticeship			
Yes	93	70	
No	7	30	
N	(477)	(433)	84.92***
Certainty of Career Choice During High School			
Very certain	50	38	
Somewhat certain	31	32	
Somewhat uncertain	10	17	
Very uncertain	9	13	
N	(478)	(433)	19.88***

*p <.05; **p< .01; ***p< .001.

and 70%, respectively). Half of the apprentice group, however, reported that they were "very certain" about their career choice during high school versus 38 percent of the constructed control group reporting they were "very certain." Conversely, 30 percent of the comparison students reported some degree of uncertainty about their career choice compared to only 19 percent of the apprentice group. The degree of certainty about one's career choice, retrospectively reported in this survey, however, should be viewed somewhat guardedly. Such opinions may simply reflect a justification for behaviors already made in career paths. On the other hand, the student apprentices were a likely group in general to have considered the viability of career choices before entering the contractual arrangement of an apprenticeship agreement. Thus, the contractual aspect of apprenticeship might contribute to selection of those students most certain about their careers.

While different proportions of the apprentice and constructed control group reported that certain kinds of career assistance were provided in high school, no differences were found between the groups on three ratings of the quality of high school career assistance services. On "information on occupations," "assistance with career planning," and "instruction on how to look for a job," over half of both the apprentice and comparison respondents evaluated such services in high school as "good" or "excellent."

In addition, there was no difference between the apprentices and constructed controls on the degree to which their reported career plans changed since the end of high school. For both the apprentice and comparison groups, about one-third of the respondents (36% for apprentices and 38% for comparisons) reported that their career goals had not changed at all since the end of high school. Thus, about two-thirds of both the student apprentice and

constructed control groups reported some degree of career goal changes since high school. In terms of specific career plans at the time high school ended, however, the apprentice and comparison samples were significantly different on their reported plans. Table 4-5 presents the reported plans for the apprentice and comparison samples at the end of high school, i.e., at the time of high school graduation for these subsamples.

Fifty-three percent of the student apprentices reported that they had no particular plans at the end of high school other than to continue with the job they had during high school. This compares to 40 percent of the comparison sample who responded to the same category. As might be expected, therefore, more of the comparison respondents than the apprentices reported plans "to look for a job" (21% vs. 12%) and "go to school full-time" (15% vs. 8%). The latter finding could be expected since a larger proportion of the comparison sample than the apprentice sample came from college preparatory curricula.

The reported plans at the end of high school for the apprentice and constructed control group suggest that the high school diploma is likely to be a terminal degree for a relatively large portion of both the student apprentice and comparison groups. The relative differences between the two samples in terms of continuing with a job they held during high school suggest the first indicator of post-high school impacts of the Youth Apprenticeship Demonstration. In other words, a larger proportion of the apprentice sample remained in their high school jobs which, for many, were apprenticeship positions. Thus, for the student apprentice group, fewer subjects were faced with the necessity of having to look for a job at the end of high school.

TABLE 4-5

Reported Plans at the End of High School

for Apprentice and Comparison Samples

Reported Plans At End of High School	Percentage	
	Apprentice	Comparison
No Particular Plans, Continue with Job Held During High School	53	40
Look for a Job	12	21
Enter a Training Program	9	5
Go to School Full-Time	8	15
Enter Military Service	2	4
Combine School and Work in Some Way	12	12
Other	4	3
N	(478)	(433)

Chi-square within 6 degrees of freedom = 36.26; $p < .001$.

4.2.3 In-School Work Experiences

With regard to participation in cooperative education during the senior year of high school, apprentice and comparison respondents reported significantly different participation rates ($p < .001$). Eighty-three percent of the apprentice group reported involvement in a co-op program versus only 42 percent of the comparison respondents.

In addition, the apprentice group tended to exhibit more work experiences, i.e., jobs, even apart from the apprenticeship experience. Eleven percent of the comparison sample reported that they had not been employed for pay during their high school years. This compares to (by definition) zero percent of the apprentice group without some paid employment during high school.

Interestingly, the student apprenticeship position was the only paid employment during high school for approximately 40 percent of the respondents in the student apprentice group. Of the comparison sample, about 30 percent reported only one regular job during high school and 11 percent reported no paid employment at all.

As a group, therefore, both the apprentice and comparison samples were relatively experienced workers by the time they graduated from high school. The overall average number of jobs held in high school for the apprentice and comparison groups was 2.37 for the apprentice sample and 2.02 for the constructed control group, a difference statistically significant at the $p < .001$ level.

4.3 POST-HIGH SCHOOL LABOR MARKET EXPERIENCES OF APPRENTICE AND COMPARISON SAMPLES

The previous section of this chapter discussed the personal and high school characteristics of the student apprentice and comparison samples.

This section centers upon the post-high school labor market experiences of the two groups, i.e., the general areas of impact in the Phase II research design. The section consists of three subsections dealing with major factors of post-high school labor market experiences, including: (1) the current employment status of respondents in each of the two groups; (2) the employment characteristics of respondents in the two samples; and (3) the aspects of the school-to-work transition problems experienced by the apprentice and constructed control groups.

4.3.1 Current Employment Status

Table 4-6 presents data related to the current employment status of the apprentice and comparison samples. A significantly larger proportion of the comparison sample than the apprentice group (18% vs. 11%) reported that they were primarily students (post-secondary) at the time of the interview. Among this student subgroup, nearly one-quarter reported seeking an A.A. degree (23%), and over one-half sought a B.S. (40%) or post-graduate degree (11%). There were no apparent differences between the two samples with respect to degree aspirations. Further data on employment patterns after graduation from high school were not collected from respondents who considered their primary status as "student." Excluding the "student" group for both the apprentice and constructed control group, therefore, the majority of respondents in the two groups (87% and 84%, respectively) reported that they were currently employed. Of those not employed at the time of the interview, only 5 percent of both the apprentice and comparison samples reported that they had not been employed at any time since high school.

TABLE 4-6

Selected Post-High School Labor Market Experiences of

Apprentice and Comparison Samples

Characteristics	Percentage		Chi Square
	Apprentice	Comparison	
Employment Status			
Primarily a Student Now	11	18	
Currently Employed	77	68	
Not Employed	12	14	
N	(478)	(433)	10.50**
Other Jobs Since High School			
Yes	24	32	
No	76	68	
N	(449)	(408)	6.89**
Changed Career Plans as a Result of Work Since High School			
Yes	24	25	
No	76	75	
N	(476)	(432)	0.20

**p< .01.

Further, the majority of both of the employed apprentice and constructed control group respondents reported that they had not had jobs other than their current job since high school (76% and 68%, respectively). Thus, 8 percent fewer of the apprentice sample than the comparison sample reported having had one or more jobs besides their current job since high school. Finally, about 75 percent of both the apprentice group and comparison group reported that their career plans had not changed as a result of their work experiences since high school. This was approximately the same proportion of respondents who reported career direction changes as a result of work experiences in high school.

Of the 25 percent of the student apprentice sample and constructed control sample who did report career changes as a result of post-high school work experiences, most were positive, e.g., "confirmed interest in field" and "motivated to further education." The types of career changes were not significantly different for the apprentice and comparison samples.

4.3.2 Employment Characteristics

Table 4-7 presents the major DOT occupational categories for the current or most recent jobs of the apprentice and comparison samples. The reported occupational areas for the two groups were significantly different, although differences within each occupational area were not large. The most notable exceptions were those occupations categorized as either clerical and sales or in the mechanical trades.

A larger proportion of the apprentice group than the constructed control group reported current or most recent employment in the mechanical trades area (48% vs. 36%). Conversely, more of the comparison group were currently (or most recently) engaged in clerical and sales occupations,

TABLE 4-7

Collapsed Major DOT Categories of Reported Current or Most Recent Occupation For Apprentice and Comparison Samples

Major DOT Categories	Percentage	
	Apprentice	Comparison
Professional, Technical and Managerial Occupations Drafter Technician (dental, mechanical)	6	5
Clerical and Sales Occupations Secretary (legal, medical) Auto parts clerk	9	17
Service Occupations Child care attendant	8	9
Machine Trades Occupations Machinist Auto mechanic	48	36
Structural Work Occupations Auto body repairer Welder	20	18
Miscellaneous Occupations Offset plate worker Film processor	5	9
Other Occupations Agriculture/Processing/Benchwork Occupations	4	6
N	(399)	(332)

Chi-square within 6 degrees of freedom = 627.96; $p < .001$.

i.e., 17 percent for the comparison group vs. 9 percent for the apprentice sample.

Table 4-8 presents wage data and other information on employment duration for the apprentice and comparison samples. There were no significant differences between the program participants and the constructed control group on current hourly wage, starting hourly wage, number of hours usually worked per week, number of weeks employed in one's current job, or annualized income. The wage data reported by all respondents was converted to an hourly rate when pay methods were on a different basis. The variable, "annualized income," was created by projecting an estimated yearly income from the average weekly income of the respondents (for both regular jobs and/or part-time employment, if applicable). Thus, on these hard indicators of program impacts, no significant differences were found between apprentices and the comparisons.

In addition to the employment data just discussed, post-high school outcomes also included measures of occupational stability and job satisfaction regarding the respondents' current or most recent job. Occupational stability was defined as the match between the occupation for which the respondents trained in high school and the occupation currently or most recently held by those respondents at the time of the interview.

Table 4-9 presents the occupational stability measures for the two respondent groups using the DOT occupational code in descending order of specificity. That is, the three-digit DOT codes represent the most specific coded occupation (for example, machinists and related occupations), within a larger two-digit DOT code division (metal machining occupations), which comprises only one of nine major divisions in the one-digit category (machine trades occupations).

TABLE 4-8

Wage Information and Employment Duration for Apprentice and Comparison Samples

Employment Characteristic	Samples		t value
	Apprentice	Comparison	
Current Hourly Wage			
Mean	$ 4.54	$ 4.46	
SD	1.34	1.50	
N	(396)	(323)	0.79
Starting Hourly Wage			
Mean	$ 3.70	$ 3.70	
SD	1.19	1.17	
N	(348)	(271)	0.03
Number of Hours Worked Per Week			
Mean	40.96	40.56	
SD	8.30	8.55	
N	(392)	(396)	0.63
Number of Weeks in the Job			
Mean	48.68	49.01	
SD	42.95	58.98	
N	(398)	(332)	0.09
Annualized Income			
Mean	$ 10,074	$ 9,662	
SD	4,230	4,408	
N	(404)	(342)	1.30

TABLE 4-9

Occupational Stability Measures for Apprentice and Comparison Samples

Type of Measure	Percentage		Chi Square
	Apprentice	Comparison	
Three-Digit DOT Code			
Match	45	34	
No Match	55	66	10.15**
Two-Digit DOT Code			
Match	53	38	
No Match	47	62	16.27***
One-Digit DOT Code			
Match	62	48	
No Match	38	52	15.13***
N	(399)	(332)	

Note: Table includes only those respondents who reported a current or most recent occupation. The stability measure indicates the correspondence between one's current or most recent occupation and the occupation that the subject reported training for in high school.

**p < .01; ***p < .001.

As Table 4-9 shows, in each of the three stability measures, apprentices were much more likely than the comparisons to be working currently or recently in an occupation for which they trained in high school. As might be expected, this likelihood was strongest in the one- and two-digit codes since the measures were not independent. Because most student apprentices were recruited from high school vocational classes, the higher occupational stability for the program participants may be attributed to a selection factor. Nonetheless, since the match was between occupation prepared for and current or most recent occupation, the stability indicator did not include job changes in both groups. Thus, occupational stability was viewed as a soft indicator of program impact.

Job satisfaction scores on current or most recent occupation provided another important measure of possible impact in the apprentice-comparison study. Table 4-10 exhibits data on the scores derived from both the apprentice and comparison sample. Respondents rated their jobs on six different satisfaction areas using a four-point scale (1=very dissatisfied; 2=dissatisfied; 3=satisfied; 4=very satisfied). A scale score also was constructed by summing the individual item score results in an overall job satisfaction scale score. The apprentice group included both leavers and stayers in the in-school apprenticeship positions. For every aspect of job satisfaction rated, significant differences were found between the two groups, and these differences consistently favored the apprentice sample. The apprentice respondents, in every instance, showed a higher satisfaction level than did the comparison respondents. The difference was especially pronounced for the mean job satisfaction scale (mean scores of 18.79 and 18.01 for the apprentice and comparisons, respectively). Participation in

TABLE 4-10

Means and Standard Deviations of Job Satisfaction Scores on Current or Most Recent Job for Apprentice and Comparison Samples

Job Satisfaction	Samples		t value
	Apprentice	Comparison	
Rate of Pay			
Mean	2.88	2.77	
SD	.70	.69	2.21*
Opportunity for Advancement			
Mean	2.96	2.78	
SD	.81	.83	3.17**
Supervision			
Mean	3.19	3.06	
SD	.67	.68	2.75**
Recognition for Doing Good Job			
Mean	3.15	3.04	
SD	.76	.75	2.16*
OJT Instruction			
Mean	3.28	3.13	
SD	.65	.66	3.28**
Sense of Accomplishment on Job			
Mean	3.33	3.20	
SD	.63	.73	2.87**
Job Satisfaction Scale Score			
Mean	18.79	18.01	
SD	3.07	3.04	3.73***
N	(445)	(398)	

Note: Apprentice group contains both workers who stayed in and left the positions they had as student apprentices.
*p < .05; ** p < .01, *** p < .001.

the YAPs thus appeared to bear a significant influence on the degree of job satisfaction reported by the participants following high school graduation.

4.3.3 School-to-Work Transition

Aspects of the school-to-work transition were reported by respondents in both sample groups in terms of high school courses most beneficial in helping to make the transition from school to work. Table 4-11 presents the data on the frequently mentioned most beneficial high school courses, clustered by major categories. Although the respondents named specific courses and course titles in identifying those courses helpful in the school-to-work transition, the courses were grouped into major areas of vocational or academic curricula. The table shows the aggregated responses for up to three courses identified by the respondents. No chi-square was conducted on the aggregate, but analyses on each of three separate course listings revealed no significant differences between the two respondent groups. The proportions of each group are nearly identical in each category, with trade and industrial, mathematics, and language arts courses mentioned most often. These results suggest that students share a somewhat common perception of those courses most beneficial in making the transition from school to work. Also, although the respondents were primarily vocational students while in high school, it was interesting to note that about half of the courses mentioned as helpful in the school-to-work transition were in the academic category.

Table 4-12 presents the distribution of the most important school-to-work transition problems reported by the apprentice and comparison groups. The table excludes those respondents from both samples who reported that they had not experienced any school-to-work transition problem (38% of

TABLE 4-11

Categories of High School Courses Most Beneficial in School-to-Work Transition for the Apprentice and Comparison Samples

High School Course Categories	Percentage	
	Apprentice	Comparison
Vocational/Technical Combined	47	45
Business/Office	6	5
Home Economics/Family Life	1	1
Technical	9	8
Trade and Industrial	26	25
Other Vocational/Technical	5	6
Academic Combined	49	52
Language Arts	17	19
Mathematics	24	23
Physical/Biological Sciences	5	5
Social Sciences	3	5
Other	3	2
None	1	1
Total Responses	(1260)	(1163)

TABLE 4-12

Most Important School-to-Work Transition Problem

Reported by Apprentice and Comparison Samples

School-to-Work Transition Problem	Percentage	
	Apprentice	Comparison
Relations with Adults	4	3
Authority		
Relations with boss		
Time Management/Reliability	25	26
Adjusting to hours		
Being on time		
Attitude Toward Work	9	4
Not wanting to work		
Lack of freedom		
Lack of Experience/Training	12	17
Finding the right job		
Lack of experience		
School Inadequate/Different	13	10
Few demands in school compared to job		
Students don't have to work		
Money Problems/Job Opportunities	7	8
Financial obligations		
Low wages for beginning workers		
Initiative/Unsure of Self	1	1
Fear of making mistakes		
Not a kid anymore		
Independence/Responsibility	29	31
Being on your own		
Accepting responsibilities		
N	(302)	(267)

Chi-square with 7 degrees of freedom = 10.54; NS.

the apprentices and 37% of the comparisons). No significant differences were found in the types of transition problems noted by the apprentice group and the constructed control group. Problems regarding the management of time and increased independence or responsibility were the most frequently mentioned school-to-work transition problems for both of the samples. The lack of differences (both in the types of problems or their very existence) between the two respondent groups suggested two aspects about school-to-work transition problems. First, it may be that not all youth experience school-to-work transition problems (or at least view the transition adjustment as a problem). Second, there do appear to be some common types of school-to-work transition problems (e.g., coping with time management and independence) which seem characteristic for the particular age group in this study.

4.4 MULTIVARIATE MODEL OF THE IMPACTS OF PROGRAM PARTICIPATION

A multiple regression analysis similar to the student apprentices' multivariate analysis, described in detail in Chapter 3, was employed in the apprentice-comparison research. The particular analysis used in the comparison was, again, the simplest fully recursive path analysis model for the effects of having had participated in an apprenticeship during high school. This model is represented diagrammatically in Figure 4-1. More specifically, a person who had been a YAP participant was treated as a dummy variable, with scores of 1 applied to the student apprentice group and scores of 0 to members of the comparison group.

In the main, background characteristics were the same as those used to examine persistence in an apprenticeship (see Chapter 3). However, one variable, namely the wages (in dollars per hour) apprentices received when

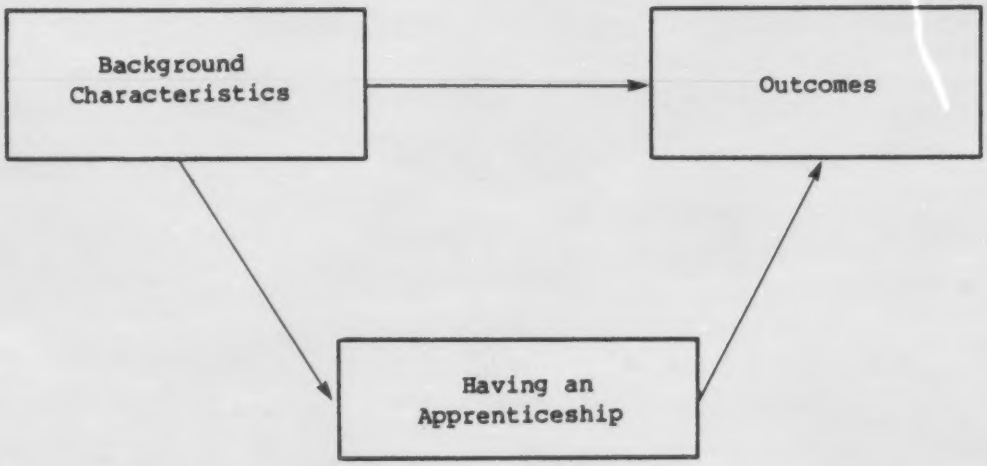

Figure 4-1

Diagram Summarizing Path Analysis Model for Analyzing the Effects of Having Participated in a Youth Apprenticeship Project.

they began their apprenticeship, was deleted. Similarly, one outcome variable was dropped and another added. Job performance as an outcome was omitted because job performance evaluations were not collected for the comparison group. Occupational stability was added as an outcome variable. This variable was measured by assigning scores of 1 to respondents still working in the fields for which they had studied in high school, and scores of 0 to others.

Table 4-13 summarizes the results of each separate path analysis. The entries in Table 4-13 once again are metric, i.e., "raw score" or "unstandardized" regression coefficients, because they tell how much of a gain on the various outcomes was produced by participating in an apprenticeship. The results in Table 4-13 indicate that participation in apprenticeship had a significant positive influence on occupational stability and job satisfaction. In other words, participation in an apprenticeship makes it more likely that people will like and stay with the job for which they are training. Participation in an apprenticeship also had a small but not significant positive influence on income, but this influence is far outweighed by the fact that men are paid more than women and that income increases as post-high school experience increases.

In general, overall high school grade point averages were positively and significantly related to occupational stability. Better performers in high school (as indicated by grades) tended to enter occupations for which they trained in high school or better high school performers tended to report they had trained for the occupation in which they were currently employed. Conversely, the data indicated a significant negative

relationship between occupational stability and the degree of likelihood that the respondent would attend college. The program participants, other things being equal, had about a 26 percent better chance of being currently or most recently employed at a job for which they were trained in high school.

In terms of annualized income for apprentices and comparisons, it appeared that there was no distinct (significant) advantage of program participation. As with the apprentice path analysis data presented in Chapter 3, sex of the respondent and the number of years out of high school were significant predictors of annualized income. Starting hourly wage was not used in these path analyses.

Finally, program participation had a significant influence on job satisfaction in the current or most recent job of the respondents. This result of student apprenticeship experience is interesting since the program participants included both those still in the apprenticeships and those with new current jobs. While no precise explanation of this finding was evident in the data, it seemed most likely that the apprentices tended to stay in the same type of job (occupational stability) even if they left their apprenticeship.

TABLE 4-13

Metric Regression Weights Summarizing Effects of Various Characteristics on Outcomes for Apprentice and Comparison Groups

Effect of	Occupational Stability (N = 725)		Annualized Income (N = 725)		Job Satisfaction (N = 725)	
	Total	Direct	Total	Direct	Total	Direct
Sex	.174	.177	3280.51*	3283.40*	.237	.245
Age	.011	.023	-5.68	7.72	.091	.128
Race	.043	.064	23.02	46.64	.323	.388
Co-op Student	.043	-.010	-37.04	-92.95	-.371	-.436
Graduation Year	-.013	-.062	2378.94*	2284.67*	-.100	-.249
H. S. Grades	.107*	.099*	127.95	119.44	.140*	.116
H. S. Career Assistance	.035	.038	-658.97	-655.73	.111	.120
H. S. Apprentice Information	.115	.008	187.75	68.15	.682*	.353
Likelihood of College	-.301*	-.286*	-190.42	-172.79	-.273	-.227
Having an Apprenticeship	.259*	.259*	290.35	290.35	.799*	.799*
Multiple R	.241		.184		.175	

*Weight at least twice its standard error.

CHAPTER 5: CHARACTERISTICS AND EXPERIENCES OF PARTICIPATING EMPLOYERS

The sample of employer respondents was selected from all those employers who participated in the Youth Apprenticeship Demonstration between 1978 and 1980. The selection procedures for the employer sample are detailed in Chapter 2. A total of 317 employers were interviewed. This chapter describes the characteristics and experiences of these participating employers. The chapter is organized into the following sections: (1) characteristics of participating employers; (2) experiences and perceptions of participating employers with respect to the project and apprenticeship; (3) assessments and outcomes among the employer sample; and (4) multivariate analysis of employer assessments and outcomes.

5.1 CHARACTERISTICS OF PARTICIPATING EMPLOYERS

This section presents the characteristics of the employer sample. It includes three fundamental descriptors of the employers' firms: number of employees, type of business, and collective bargaining status. In addition, the sex and racial/ethnic composition of the respondents is provided. Table 5-1 displays the characteristics of employers' companies.

Over three-fourths of the employer respondents were affiliated with very small organizations employing less than 50 individuals. Use of the Standard Industrial Classification system yielded the information that manufacturing and service organizations predominate in the sample. Within the predominant categories, Table 5-1 provides examples of the most common types of businesses encountered. The overwhelming majority of the employers did not have a unionized work force.

TABLE 5-1

Selected Characteristics of Participating Employers

Selected Characteristics	Percentages
Number of Employees	
0-19	58
20-49	18
50-99	12
100 and over	12
N	(315)
Standard Industrial Classification	
Manufacturing	44
Machinery, except electronics	
Fabricated metal products	
Service	38
Auto repair	
Miscellaneous repair services	
Retail	9
Auto dealers and gas stations	
Furniture, home furnishings, and equipment	
All Others	9
Construction (special trade and other)	
Transportation, electric, gas, sanitary services	
Wholesale trade (durable and non-durable goods)	
Public administration (environmental quality, housing)	
Agriculture, forestry, fishery	
Financial, insurance, real estate	
N	(316)
Collective Bargaining Status	
Employees organized	10
Employees not organized	90
N	(317)

The employer respondents were 90 percent male and 10 percent female. Nearly all were whites (94%), with blacks accounting for slightly over one-half of the minorities.

5.2 EXPERIENCES AND PERCEPTIONS OF PARTICIPATING EMPLOYERS WITH RESPECT TO THE PROJECT AND APPRENTICESHIP

This section of the chapter is divided into three subsections that present descriptive data on employers' experiences and perceptions in relation to the project and apprenticeship as a system of training. These subsections are: (1) entry into the project; (2) participatory experiences and perceptions; (3) and school-to-work transition problems.

The first subsection describes the types of information that employers received about the YAP, including the availability of financial incentives; their motivations for participating; previous knowledge and use of apprenticeship; and modifications they made in their work process in order to register their apprenticeship program under the project. The second subsection examines employers' actual experiences with and perceptions of the project and of apprenticeship. These discussions treat the employers' level of participation, their current use and status of apprenticeship as a system of training, Bureau of Apprenticeship (BAT) involvement, and whether or not the employers requested the stipends due them. The third subsection deals with the types of school-to-work transition problems students face. Employers' comments on this process are compared with those elicited from the apprenticeship sample.

5.2.1 Entry into the Project

Table 5-2 exhibits selected variables pertaining to employers' awareness and knowledge of YAP features, including financial incentives available to

them as participants in the project. A plurality of the employer sample (42%) indicated that they first heard about the YAP from school personnel, while a slightly smaller percentage (37%) reported their initial awareness came from project personnel. Among the remainder, some heard from students working in the company (6%), some from other employers (4%), while others heard from a variety of other sources.

A substantial majority of the sample were aware from the outset that employers were expected to retain the apprentices after graduation. Of those who did not know initially about this feature, one-fifth of them became aware of it at some "later" time, while the other four-fifths either "never were informed" or found out about it "now," meaning as a consequence of the interview question.

Financial incentives for participating employers may take two forms: receipt of stipends for apprentices employed during their high school years, or use of the Targeted Jobs Tax Credit by employers who hire cooperative education students and members of other specific target groups. All employers, except those in New Jersey (where stipends were not used), were queried about their awareness of the fact that stipends would cease at the time of each student apprentice's graduation. Nearly all of the employers in the seven sites knew of this feature before entry into the project. Among the small number of those who were not aware of this, slightly over one-third found out about it later (36%) and the remainder never were told or learned of it during the interview process (64%).

With respect to the Targeted Jobs Tax Credit, a majority of the employers were aware of this tax incentive, although a considerably smaller

TABLE 5-2

Employers' Awareness of Youth Apprenticeship Project

Informational Aspects	Percentages
How Employers First Heard About the Project	
School personnel	42
Project personnel	37
Student, other employer	10
Other	11
N	(316)
Aware That Apprentices Are To Be Retained After Graduation	
Yes, from outset	86
No, later or never	14
N	(317)
Aware that Stipends Cease at Apprentices' Graduation	
Yes, from outset	93
No, later or never	7
N	(267)
Awareness and Use of Targeted Jobs Tax Credit	
Aware of it and have used it or plan to	30
Aware of it but have not used it	27
Not aware of it	42
N	(317)

proportion of the group had used it or planned to use it. A sizeable minority were not aware of the tax credit.

Data on employers' motivations to participate in the project are displayed in the following table. Table 5-3 shows the aspects of the project which were of interest to the employers, with illustrative comments under each major category of responses. One-half of the employers said that the availability of students who had been previously trained or screened constituted the most important aspect influencing their decision to participate. The availability of experienced, motivated students thus was the determining factor in attracting these employers to the project. Over one-third of the sample identified altruistic motives for their participation, such as being able to provide further training and employment for young people or simply being able to help youth. Only one-tenth indicated that economic advantages, primarily the receipt of stipends, constituted the most important aspect influencing their entry.

Further questioning about financial incentives was conducted in order to determine their importance in encouraging employer participation. The results were somewhat contradictory. On the one hand, the reported importance of stipends in employers' decision to participate, asked of all employers except those in New Jersey, was relatively high. Approximately three-fifths of this group said stipends were "very" or "somewhat" important. On the other hand, more than three-quarters of these employers indicated they would have participated even if stipends had <u>not</u> been available! To further confound this issue, slightly less than three-fourths of the entire sample later reported that they believed financial incentives, such as a direct subsidy or a tax credit, were necessary to motivate employers to hire student

TABLE 5-3

Project Features Which Motivated Employers to Participate

Project Features	Percentages
Most Important Aspects of Interest	
Helping youth	8
Being able to help a young person	
Interest in young people	
Provide training/employment	27
Being able to help train a young person	
Help youth use previously learned skills	
Students pre-trained	32
Availability of experienced students	
Part-time work by student leads to full time	
Students pre-screened	18
Student had expressed willingness to be in program	
Getting a motivated person	
Economic advantages	10
Stipends/funding	
Person cheaply trained	
Other aspects	5
Type of business made program desirable	
Labor shortage in trade	
N	(315)
Importance of Stipends in Employers' Decision to Participate	
Very important	25
Somewhat important	34
Not very important	18
Not at all important	23
N	(267)
Willingness To Participate if Stipends Had Not Been Available	
Yes	78
No	22
N	(267)
Believe Financial Incentives Necessary To Motivate Employers to Hire Apprentices	
Yes	71
No	29
N	(316)

apprentices. It would appear that, while financial incentives did not constitute the predominant factor in these employers' motivation to participate (recall that only one-tenth said it was the most important aspect in their decision), they perceived that, in general, such incentives were needed to motivate other employers.

Over three-quarters of the sample (77%) indicated that they had no initial reservations about participating in the project. Among the 23 percent who expressed some reservations, almost one-half (49%) were concerned about the quality and dependability of the students they might employ. A slightly smaller percentage of the respondents in this subgroup (46%) said that the involvement of the Federal Government, with its "red tape" and paperwork, concerned them. The remaining 6 percent were uncertain whether participating in the program would benefit their business or the students involved.

Employers' previous experience with apprenticeship was ascertained by their awareness of apprenticeship as a formal system of training and their use of registered apprenticeship prior to participating in the project. Seventy-two percent of the employers were aware of apprenticeship as a formal system of training prior to entry into a YAP. When asked directly about their companies' use of registered apprenticeship prior to participation in a YAP, 31 percent of all employers said they had used apprenticeship previously, while 69 percent reported that they had not.

When employers registered their apprenticeship program(s) under a YAP, 22 percent had to modify their firms' work processes to accommodate the training of student apprentices. Among this subgroup, the modifications fell into two major categories: changing the production process or schedule (69%) and adding training sessions (31%).

Some employers in the first category found that production processes themselves were altered. Others in this group reported that they had to reschedule their processes to accommodate the student apprentices, or adjust their organizational structure to give the student apprentices comprehensive exposure and experience in all phases of the company's plant operation.

In the second category, employers either added separate training sessions or spent additional time with the student(s) to teach the techniques used in their shops. A few employers also commented on the ensuing need to change communication lines within the shop.

5.2.2 Participatory Experiences and Perceptions

Our discussion turns now to actual experiences of employers as a consequence of involvement with the project and with apprenticeship. Included in this description are the level of project participation, as revealed by numbers of apprentices hired and retained; employers' current use of apprenticeship as a system of training; BAT involvement; and employers' practices in requesting stipends.

The level of employers' participation in the YAPs was measured by two variables: the total number of student apprentices hired and the number of graduate apprentices currently employed. Table 5-4 exhibits these data, reported by all employers in the sample.

With respect to the total number of student apprentices hired through the demonstration, over one-half of the employers said they had hired only one or two apprentices. Conversely, less than one-fifth of the employers reported that they had hired more than four student apprentices. The average number of student apprentices hired by each employer was 3.4.

TABLE 5-4

Level of Employer Participation in the

Youth Apprenticeship Project

	Percentages	
Number Employed	Student Apprentices Employed	Graduate Apprentices Still Employed
0	2	45
1	36	27
2	21	11
3	12	5
4	10	4
5-10	15	3
11-25	4	<1
Don't know	0	4
N	(317)	(317)

Overall, more than one-half of the employers had graduate apprentices currently working for them. Of those employers who currently employed graduate apprentices, slightly over one-half of them employed one graduate apprentice, while slightly less than half of them employed two or more graduate apprentices. The average number of graduate apprentices currently employed was 2.0.

A critical consequence of employers' experience with apprenticeship was their current use of and practices related to this form of training within their own businesses. Table 5-5 presents employers' answers to questions pertaining to the number of registered apprenticeship programs in their companies, whether or not such programs were considered an integral part of the company's training approach, and if arrangements existed for graduate apprentices to continue their training by receiving some form of related instruction.

Among the entire employer sample, nearly three-quarters reported that they have registered apprenticeship programs in their companies. Furthermore, over two-thirds of the employers regarded registered apprenticeship as a permanent and significant component of their companies' approach to training.

Those employers who currently employed graduate apprentices (55 percent of the sample) were queried about whether or not any arrangements existed for these apprentices to receive some form of related instruction as part of their apprenticeship. Among these employers, nearly two-thirds replied that such arrangements do exist.

The primary role of BAT was to oversee the registration of apprenticeship programs and of apprentices. BAT's involvement in registration

TABLE 5-5

Current Use and Status of Apprenticeship as a System of Training Among Participating Employers

Current Use/Status of Apprenticeship	Percentages
Number of Registered Occupations	
0	26
1	55
2	10
3	6
4 or more	3
N	(317)
Consider Registered Apprenticeship a Permanent Part of Company's Training	
Yes	70
No	30
N	(317)
Arrange Related Instruction for Graduate Apprentices	
Yes	63
No	37
N	(172)

activities for the YAPs, which were specifically aimed at in-school apprentices, constituted an additional, somewhat parallel activity to BAT's primary mission. BAT's monitoring function, vis-a-vis the projects, involved liaison with and periodic reporting from YAP sponsors. BAT staff increasingly have been directing efforts toward the addition of new registered apprenticeship programs, and contacts with employers participating in the projects might have helped to promote BAT's goal of adding new sponsors of apprenticeship.

Of interest then, was the frequency and helpfulness of BAT staff contacts as reported by the employers. Of all employers in the sample, over one-third (39%) had been contacted by a BAT representative since they began participating in the project. Nearly all of this subgroup reported that the BAT representative had been "very" or "somewhat helpful" (55% and 33%, respectively) in matters relating to the employers' apprenticeship programs. A small proportion of these employers indicated that the individual had been "not very helpful" (2%) or "not helpful at all" (10%).

A final aspect of employers' experiences in project participation concerns their practice of requesting reimbursement for apprentices hired and retained during the high school training phase. All employers, except those in New Jersey, were asked if they had requested stipends in the total amount due their companies. Within this group, 83 percent had done so, while 17 percent had not. Those who had not done so explained the circumstances surrounding their not requesting the full amount of stipends.

A majority (51%) of those who had not requested the full amount due them indicated that it simply was unimportant and that they were most interested in getting the employee. Over one-tenth (12%) did not want to bother with the paperwork and the wait involved in obtaining the reimbusement. Of the

remaining 37 percent, 25 percent reported that their company disbanded or underwent a reorganization and 12 percent said the apprentice quit or was terminated, making the employers ineligible for reimbursement.

5.2.3 School-to-Work Transition Problems

This third major subsection about employers' experiences and perceptions relates to the types of problems, from the employers' viewpoint, that students face in making the transition from school to work. The data reflect employer perceptions about the process of transition. As such, they provide a possible counterpoint to the types of transition problems reported by the sampled apprentices. Thus, the perspectives of adults (employers) and of youth (apprentices) about these problems are compared in this presentation.

Both the employer and supervisor respondents (in those cases where the latter also were interviewed to provide apprentices' individual job performance evaluations) identified students' transition problems. Ten percent of the combined employer and supervisor respondents reported that there were no major school-to-work transition problems faced by students, 4 percent either could not identify the most important problem or gave a miscellany of answers, and 86 percent responded with answers categorized in the following table. Table 5-6 presents the major transition problem categories, with illustrative remarks under each category, for the employer/supervisor and apprentice samples. Significant differences between the two groups were found.

Looking first at responses given by the employer sample, it can be seen that the students' attitude toward work was the major problem identified by over one-third of the employer group. The connotation associated with work

TABLE 5-6

Differences in Most Important School-to-Work Transition Problems

Among the Employer/Supervisor and the Apprentice Samples

Transition Problems	Percentages	
	Employer/Supervisor Sample	Apprentice Sample
Relations with Adults	3	5
Learn who authority is		
Working with adults		
Time Management/Reliability	10	23
Punctuality, attendance on job		
Adjusting to time schedule		
Attitude Toward Work	38	9
Lack of responsibility		
Poor attitude, motivation		
Lack Experience/Training	12	10
Lack of knowledge		
Lack of experience		
Schooling Inadequate/Different	12	11
School doesn't prepare for work		
No counseling re job expectations		
Economic Burdens/Job Opportunity	2	6
Capital outlay for tools		
Low pay		
Immaturity/Indecisiveness	16	2
Lack of maturity		
Uncertainty re trade or self		
Independence/Responsibility	7	34
Realization that they have to work		
Adjustments to own home, etc.		
N	(309)	(380)

Chi-square equals 187.10 with 7 degrees of freedom; $p < .001$.

NOTE: Illustrative employer comments shown as examples differ, in some cases, from those made by the apprentice sample. However, the major categories of transition problems are the same for both groups.

attitude was decidedly negative. Employers regarded the students as lacking a sense of responsibility and being poorly motivated. Immaturity or indecisiveness was the next most frequently mentioned major problem. These characteristics were seen primarily as a function of the students' youth. Clustering at or near the 10 percent level were perceived inadequacies in schooling, the lack of experience or training found among students, and their difficulties with respect to time management and reliability.

Differences between the employer and apprentice groups were marked in four transition problem categories: time management/reliability; attitude toward work; immaturity/indecisiveness; and independence/responsibility. The apprentice group was much more likely to report adjustment-to-adulthood problems, characterized by their newly found independence and need to manage time in different ways, than to report attitudinal or personal problems. The employers were much more inclined to be critical of personal attitudes affecting work and, to a lesser extent, of students' general lack of maturity. The apprentice sample, in speaking of attitudes toward work, identified constraints imposed by the workplace (e.g., lack of freedom and doing physical labor). Employers, on the other hand, commented on the students' lack of self-discipline and dedication and on their bringing the "play theory" to the workplace.

The ascendancy of attitudinal and maturation problems in the eyes of employers and the dominance of problems related to greater independence and time management demands in the eyes of the apprentice group revealed two rather contradictory viewpoints. These differing expectations brought to the work environment by the employer and apprentice groups may complicate successful transition from school.

5.3 ASSESSMENTS AND OUTCOMES AMONG THE EMPLOYER SAMPLE

The measure of impacts for participating employers involves self-reported project assessments and definitive outcomes related to project participation. This section of the chapter presents descriptive data pertaining both to assessments and outcomes. It is organized within four discrete subsections.

The first subsection discusses specific project assessments made by employers, including overall project satisfaction, position on continued Federal funding for YAPs, recommendation of the projects to other employers, success of the projects in helping students make the school-to-work transition, a comparison of student apprentices with other young employees hired by employers' firms, and the single best and worst project features. The second subsection presents apprentices' job performance evaluations, made by supervisors within the employing organizations. Job performance scores are examined in conjunction with various assessment and outcome measures to show differences which occurred among the selected variables. Turning from project-specific impacts, the third subsection presents employers' satisfaction with apprenticeship as a system of training, apart from involvement in a YAP. In the last subsection, the influence of previous experience with apprenticeship upon some of the project outcomes and assessments is examined.

5.3.1 Project Assessments

Key project assessments made by employers are presented in Table 5-7, which reveals first that overall satisfaction with the YAPs was high. More than one-half of the employers indicated that they were "very satisfied" while over one-third were "somewhat satisfied." Fewer than one-tenth reported being "somewhat" or "very dissatisfied." When asked if, as taxpayers, they favored

TABLE 5-7

Project Assessments Made by Employers

Project Assessments	Percentages
Overall Satisfaction With Project	
Very satisfied	57
Somewhat satisfied	34
Somewhat dissatisfied	5
Very dissatisfied	4
N	(316)
Position on Continued Federal Funding of Projects	
Favor	90
Oppose	10
N	(317)
Recommended the Project to Other Employers	
Yes	63
No	37
N	(317)
Success in Helping Students Make School-to-Work Transition	
Very successful	53
Somewhat successful	38
Not very successful	7
Very unsuccessful (a failure)	2
N	(314)
Compare Student Apprentices With Other Young Employees Hired	
Better than most	55
About the same as most	41
Worse than most	4
N	(314)

or opposed continued Federal funding for such projects as the YAP, nearly all the employers said they favored continued expenditures. As a result of their participation in the program, nearly two-thirds of the sample had recommended the project to other employers.

One of the objectives of the Youth Apprenticeship Demonstration has been to help students make the transition from school to work. Most employers viewed YAPs as "very" or "somewhat successful" in accomplishing this goal. Employers compared the student apprentices hired through the project with other young people who had worked for their companies. As shown in Table 5-7, the majority rated the student apprentices as "better than most" other young employees.

Another type of evaluative data collected from employers pertains to best and worst project features. The following discussions recount those features which employers identified, based on their experiences with the Youth Apprenticeship Projects. Table 5-8 displays the distribution of responses across categories which were named as the best single project feature. Illustrative comments appear under each major category. Over one-quarter of the employers said that availability of students with previous training was the single best feature of the project. Somewhat fewer felt that having prescreened, motivated students as apprentices constituted the highlight of the project. These two categories account for nearly one-half of the sample and correspond closely to the primary project features which motivated employers to participate (see Table 5-3).

The sense of satisfaction in training students and in improving the training program generally was cited as the best feature by over one-fifth of the employers. Another significant proportion of the employers felt that

TABLE 5-8

Employers' Assessments of the Best Single Feature

of the Youth Apprenticeship Projects

Best Feature of Projects	Percentages
Help Employ Youth Chance for youth to get out and work Helping students	15
Improved Training Program Train a student in field/company way Being able to give better training program	22
Pre-Trained Students Getting someone with experience Prior training given in schools	26
Pre-Screened, Motivated Students Screening of students Students' eagerness to work	21
Economic Advantages Availability of stipends Person inexpensively trained	13
None	3
N	(315)

the opportunity to employ youth constituted the best project feature. These features suggest an altruistic orientation toward youth and a standard of excellence in the employers' views of their business. Economic advantages, in the form of stipends or inexpensive training of apprentices, were mentioned by 13 percent of the sample. Only a handful of employers (3%) said there were no best features of the project.

Turning now to the worst project feature, Table 5-9 shows that over one-third of the sample said there were none! The remaining respondents mentioned features which clustered into three categories having direct impact on the employers: problems imposed by the project's structure; problems with the schools' function in preparing students for entry into apprenticeship; and problems with the students themselves.

The first category, related to the project's structure, included slightly less than one-third of the employers. Within this group, some said that project burdens, in the form of paperwork and lack of BAT communication, were the worst aspect. Others found that the training time and scheduling of training, imposed by student turnover and working around the students' school schedules, was the worst problem. Yet others felt that the program was limited, because of its short duration, was inoperative (in Houston), or had a low number of available apprentices.

In the second category, nearly one-fifth of the employers spoke of the schools' inadequate training and screening of students who entered the apprenticeship project. Finally, 15 percent of the employers commented on problems with the students themselves, who were viewed primarily as being undependable and irresponsible in their attitudes toward work.

TABLE 5-9

Employers' Assessments of the Worst Single Feature of the Youth Apprenticeship Projects

Worst Feature of Projects	Percentages
Inadequate Screening of Students Poor selection of participants Need a little better selection of students	8
Inadequate Training of Students Poor school training Lack of previous training	10
Undependable, Irresponsible Students Poor/lazy attitude of students Lack of responsibility/attendance on job	13
Other Problems With Students Adjustment to productivity schedule Communication with young people	2
Training Time/Scheduling Working around school schedule Student turnover	11
Limited Program/Number of Apprentices Program should be offered earlier Dropping of program (Houston)	4
Project Burdens Lack of BAT communication Paperwork	16
None	36
N	(312)

5.3.2 Job Performance Evaluations

Some of the sampled student apprentices were evaluated individually on their job performance by their supervisors in the employing organizations. In cases where an employing organization had hired a large number of in-school apprentices, job performance evaluations were elicited for a maximum of three students. In addition, the supervisor respondents provided information on whether or not the particular student apprentice was still employed by the company and, if not, why the student apprentice had terminated employment. In most cases, the respondent for the supervisor component of the interview (which included the job performance evaluation) was the same as the respondent for the employer component. However, for some of the interviews, there were separate respondents.

Supervisors' evaluative data are presented for approximately 460 sampled student apprentices. Supervisors rated each student employee, using a four-point scale, on ten aspects related to job performance. The four-point scale was structured as follows: poor = 1; fair = 2; good = 3; and excellent = 4. Mean scores were then derived for each performance item and for a composite job performance rating. These mean scores were used to analyze differences in the selected assessment and outcome variables included in the following discussions.

Table 5-10 presents separate mean scores and standard deviations for each of the ten job performance items, according to the apprentices' current status with the company (i.e., still employed or terminated). Since 1.0 equals the lowest possible item score and 4.0 represents the highest score, when the ten items are summed to provide a composite job performance scale,

TABLE 5-10

Job Performance Evaluations by Retention Status

Job Performance Item	Retention Status: Still Employed	Retention Status: Terminated	t-value
Work Attitude			
Mean	3.29	2.62	
SD	0.69	0.93	8.28*
Skill Level			
Mean	3.01	2.54	
SD	0.76	0.91	5.71*
Ability to Learn			
Mean	3.16	2.72	
SD	0.74	0.88	5.48*
Cooperation			
Mean	3.42	2.82	
SD	0.71	0.92	7.41*
Punctuality			
Mean	3.27	2.61	
SD	0.77	0.97	7.59*
Following Instructions			
Mean	3.18	2.71	
SD	0.73	0.90	5.82*
Relationships with Co-Workers			
Mean	3.41	2.91	
SD	0.64	0.85	6.80*
Self-Initiative			
Mean	3.02	2.40	
SD	0.77	1.00	6.95*
Pride in Work			
Mean	3.22	2.58	
SD	0.74	0.95	7.70*
Overall Performance			
Mean	3.22	2.57	
SD	0.71	0.91	8.09*
Totalled Job Performance Scale			
Mean	32.22	26.47	
SD	5.52	7.49	8.79*
N	(176)	(285)	

*p < .001.

the range of scores varies from a low of 10 to a high of 40. As Table 5-10 reveals, on every item and on the composite rating, the evaluation score was higher for apprentices still employed by the company than for those terminated. Obviously, employers retained the better employees! The greatest mean differences between the two groups were found in work attitude, punctuality, and pride in work. The lowest differences occurred in ability to learn, ability to follow instructions, and skill level. Thus, the major differences between the two groups, in the employers' view, lay in personal attitudes toward work, as opposed to mental or technical abilities.

The composite job performance score was analyzed in conjunction with numerous other variables in an effort to examine differences in job performance scores with differences in various assessments and outcomes. Table 5-11 displays the results. In comparing student apprentices to other young employees hired by their firms, employers' ratings became more favorable as job performance scores rose. In other words, employers who said student apprentices were "worse than most" other youthful employees rated their student apprentices, on the average, as "poor" (20.15), while those employers who reported that their student apprentices were "better than most" rated their student apprentices, on the average, as "good" (30.32).

New registered apprenticeship programs due to project participation and recommendation of the project to other employers also were related to student performance ratings. Higher job performance evaluation scores were evident among employers who gave affirmative responses for these two variables.

As Table 5-10 revealed, student apprentices still employed at the firms had the highest mean job performance rating (32.22). Table 5-11 shows that the ratings given for the two subgroups of terminated student apprentices

TABLE 5-11

Composite Job Performance Scores According to

Selected Assessments and Outcomes

Selected Project Assessments and Outcomes	Job Performance Scores Mean	Standard Deviation	N	F-ratio
Compare Apprentices to Other Young Employees				
Better than most	30.32	6.79	(266)	
About the same as most	27.04	7.26	(168)	
Worse than most	20.15	7.11	(20)	26.94***
New Registered Apprenticeship Program Due to Participation				
Yes	29.67	7.40	(216)	
No	27.78	7.21	(241)	7.65**
Recommended Project to Other Employees				
Yes	29.60	6.93	(297)	
No	26.94	7.81	(160)	13.96***
Apprentice's Current Status				
Still employed at company	32.22	5.52	(175)	
Voluntary termination	27.82	7.13	(206)	
Involuntary termination	22.68	7.25	(75)	58.38***
Reason for Termination				
Poor work, motivation	20.18	6.44	(67)	
Other job, more pay	29.15	6.56	(107)	
Further education	30.53	6.88	(17)	
Personal, other reasons	27.75	5.96	(32)	
Business, program problems	27.89	6.79	(27)	
Don't know	26.00	7.18	(32)	17.61***

**p < .01; ***p < .001.

declined from that high level, with those who left involuntarily receiving the lowest average score.

The data on reasons for termination showed that relatively high mean performance ratings were given to apprentices who left to further their education or get another job with more pay. Those high scores, to which the students' incentive apparently contributed, contrast markedly with the low job performance evaluation score received by those apprentices whose poor work or motivation played a role in their termination.

5.3.3 Apprenticeship Satisfaction

Apprenticeship satisfaction, as distinct from satisfaction with the YAPs, was measured by one variable. All employers rated their satisfaction with registered apprenticeship as a system of training, disregarding such features of the YAP as provision of subsidies and in-school youth employment. Ninety percent of the sample reported being "very satisfied" (54%) or "somewhat satisfied" (36%). The remaining 10 percent were "somewhat" (7%) or "very dissatisfied" (3%).

5.3.4 Influence of Previous Experience with Apprenticeship

Table 5-12 presents data which reveal the influence of previous apprenticeship experience on selected project assessments and outcomes. With respect to project assessments, overall satisfaction with apprenticeship as a general system of training and the comparison of student apprentices with other young employees were found to be negatively associated with previous apprenticeship experience. That is, employers with previous experience tended to be less satisfied with apprenticeship and less inclined to rate

TABLE 5-12

Differences in Assessments and Outcomes Among Employers

With and Without Previous Apprenticeship Experience

Selected Assessments and Outcomes	Percentages		Chi Square
	With Previous Experience	Without Previous Experience	
Overall Satisfaction With Apprenticeship			
Very satisfied	54	55	
Somewhat satisfied	31	38	
Dissatisfied	15	7	
N	(98)	(218)	6.23*
Compare Student Apprentices With Other Young Employees Hired			
Better than most	43	61	
About the same as most	55	34	
Worse than most	2	5	
N	(97)	(216)	12.52**
Success in Helping Students Make School-to-Work Transition			
Very successful	42	58	
Somewhat successful	48	33	
Failure/Not very successful	10	9	
N	(96)	(217)	7.41*
Consider Registered Apprenticeship Permanent			
Yes	78	66	
No	22	34	
N	(98)	(218)	4.22*
Related Instruction Arranged for Graduate Apprentices			
Yes	76	56	
No	24	44	
N	(58)	(114)	6.40**

*p < .05; **p < .01.

student apprentices as better than other young employees than employers whose exposure to apprenticeship came through project participation.

With respect to project outcomes, employers with previous apprenticeship experience also were less likely to rate the projects as highly successful in accomplishing the school-to-work transition goal. However, they were more likely than the other employers to consider registered apprenticeship a permanent part of their companies' approach to training and to arrange for related instruction for graduate apprentices still employed by their firms. These data suggest that while employers who were in a position to view apprenticeship from the perspective of pre- and post-project involvement showed somewhat higher dissatisfaction levels they simultaneously revealed a greater commitment to the permanency of registered apprenticeship programs and the provision of related instruction for graduate apprentices.

5.4 MULTIVARIATE ANALYSIS OF EMPLOYER ASSESSMENTS AND OUTCOMES

Examination of the univariate results suggested that multivariate analysis of the employer data might be illuminating. Accordingly, these data were analyzed with multiple regression procedures that closely paralleled the multivariate analyses of apprentice and comparison student data, which were presented in Chapters 3 and 4 of this report. These multivariate analyses of the employer data are discussed in three subsections. The first subsection describes the basic analytic design; the second subsection presents the multivariate results; and the third subsection summarizes the implications of these results.

5.4.1 Design of the Multivariate Analyses

The multiple regression analysis was applied within the framework of a causal path model. More specifically, it seemed likely that the number of

years each project operated would be a key variable mediating the influence of employer and program characteristics upon outcomes, so the employer data were analyzed following the simple, fully recursive path model presented in Figure 5-1. Subsequent paragraphs describe the variables included within each of the three principal components of the multivariate design displayed in Figure 5-1 and the relevant subgroups of the employer sample which were used for the multivariate analyses.

Employer and Program Characteristics. Measures of seven employer and program characteristics were included in the analyses. These seven indicator variables and their derivations are as follows:

- Number of Employees--This variable was measured in units of 100 employees, based upon the total number of employees reported by the employer;

- Manufacturing Firm--Standard Industrial Classification (SIC) codes were assigned to each employer's response to the question, "In what type of business would you say that your company is engaged?" A score of "1" was then assigned for each code within the manufacturing category and a score of "0" for each code in any other category;

- Union Firm--A score of "1" was assigned when the employer answered "yes" and a score of "0" when the employer answered "no" to the question, "Are your employees represented by a union?";

- Previous Apprenticeship Experience--A score of "1" was assigned when the employer answered "yes" and a score of "0" when the employer answered "no" to the question, "Prior to your company's participation in the Youth Apprenticeship Project, did your company use registered apprenticeship to provide training in any occupations?";

- Financial Incentives Necessary--This measure was the first of two variables that explored the role of financial incentives. A score of "1" was assigned when the employer answered "yes" and a score of "0" when the employer answered "no" to the question, "In general, do you think some form of financial incentive, such as a direct subsidy or a tax credit, is necessary to motivate employers to hire student apprentices?";

- Importance of Stipends--This measure was the second variable that explored the role of financial incentives. Scores from "1" to "4,"

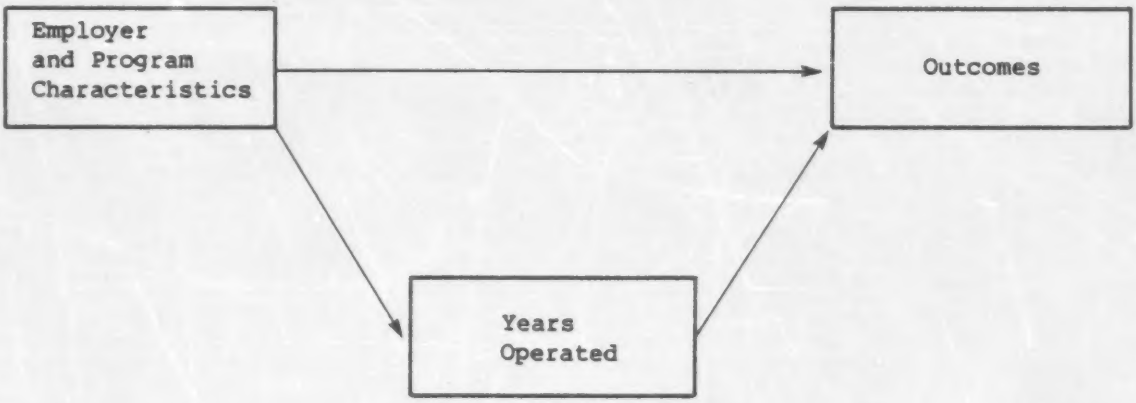

Figure 5-1

Diagram Summarizing Path Analysis Model for Analyzing the Effects of Years of Project Operation on Employer Outcomes.

representing responses ranging from "not important" to "very important," were assigned according to the employer's response to the question, "In general, then, how important was the availability of stipends in your decision to participate in the program?"; and

- Aware of Expected Retention--A score of "1" was assigned when the employer answered "yes" and a score of "0" when the employer answered "no" to the question, "Were you made aware from the outset that employers were expected to retain the student apprentices after graduation?"

Years Operated. Values were assigned to each employer respondent to represent the number of years that the local YAP had been in operation at the time of the interview (late 1980). A value of "3" was assigned for the three YAPs which began operations during the 1977-78 school year and still were in operation during the 1979-80 school year (Cleveland, Nashville, and New Orleans). A value of "2" was assigned for the four YAPs which began operations during the 1978-79 school year and continued operations during the 1979-80 school year (Des Moines, New Jersey, Rhode Island, and Rockford). A value of "1" was assigned for the one project which began operation during the 1977-78 school year and was terminated upon completion of that first year of operation (Houston).

Outcomes. Multivariate results are reported for the following four measures of outcome:

- Satisfaction with the Youth Apprenticeship Project--Scores from "1" to "4," representing responses ranging from "very dissatisfied" to "very satisfied," were assigned according to the employer's response to the question, "All things considered, how satisfied have you been with the Youth Apprenticeship Project?";

- Permanence of Apprenticeship--A score of "1" was assigned when the employer answered "yes" and a score of "0" when the employer answered "no" to the question, "Do you currently regard registered apprenticeship as a permanent and significant component of your company's approach to training?";

- Number of Apprentices Hired--This measure represents the employer's accounting of the total number of student apprentices hired through the Youth Apprenticeship Project at the time of interview; and

- Number of Graduate Apprentices Still Employed--This measure represents the employer's accounting of the number of former student apprentices who, at the time of interview, had graduated from high school and were still employed by that employing organization.

The first two variables listed may be regarded as relatively "soft" measures because they measure the employer's subjective reactions concerning the value of the project and the permanence of apprenticeship. The last two variables may be regarded as relatively "hard" measures because they represent external, quantifiable measures of behavior exhibited by employers and apprentices that, in principle, could be objectively verified.

Analytic Subgroups. None of the questions relating to stipends were posed to the New Jersey employer respondents, since stipends were not used by the New Jersey YAP. Therefore, in order to apply multiple regression analysis to all the employer respondents it was necessary to use the item about whether employers thought financial incentives were necessary rather than the rating of the importance of stipends. Because stipends are an important programmatic feature, however, a second multiple regression analysis was applied to employer respondents in all sites except New Jersey. For this employer subgroup, the importance of stipends item replaced the item regarding the necessity of financial incentives as an independent variable.

The general thrust of USDOL policy in recent years has sought to expand the apprenticeship system of training. In this connection, there also has been strong interest in the YAPs' role in generating new sponsors of apprenticehip programs. Therefore, additional analyses were applied to those employers who indicated that they had not used registered apprenticeship prior to their participation in the Youth Apprenticeship Demonstration. For this third analysis, the variable regarding previous apprenticeship experience was deleted. Once again, one analysis was performed for all employers

using the financial incentives indicator and another analysis was performed for employers outside New Jersey using the importance of stipends indicator.

To summarize, multiple regression analysis was applied to a total of four analytic subgroups.

- All employer respondents;
- Employer respondents outside of New Jersey;
- All employer respondents without previous experience with apprenticeship; and
- Employer respondents outside of New Jersey without previous experience with apprenticeship.

Examination of the results from these subgroups suggested that reporting of results should focus upon the first and last subgroups. The first subgroup is the most comprehensive and the last subgroup includes both factors of special interest, i.e., the role of financial incentives and expansion of apprenticeship sponsors. Consequently, the multiple regression results presented in the following subsection are based on: (1) all employer respondents; and (2) employer respondents outside of New Jersey who did not have previous experience with apprenticeship. When the results for the second and third subgroups differed from or expanded the findings for the first and fourth subgroups these results have been noted in the text.

5.4.2 Multivariate Results

Table 5-13 presents the multiple regression results for the two relatively "soft" measures of outcome, i.e., satisfaction with the YAP and permanence of apprenticeship. The data presented in Table 5-13 reveal that the number of years operated had a positive and significant relationship with satisfaction with the projects. Also, the relationship was stronger for the

subgroup which included only those employers without previous apprenticeship experience. In other words, those employers who cooperated with YAPs who had been in operation for a longer period of time were more likely to express satisfaction with these projects, with this tendency being strongest for those employers without previous apprenticeship experience.

Table 5-13 data also reveal that, for all the employers, the manufacturing firms and the number of years operated were positively related with permanence of apprenticeship. In other words, employers who were affiliated with manufacturing firms and those who had cooperated with older YAPs were more likely to say that they considered apprenticeship permanent.

For the employers outside of New Jersey without previous experience, the importance of stipends and the number of years operated also had significant, positive relationships with permanence of apprenticeship. That is, among employers without previous apprenticeship experience, those who said that stipends were an important factor in their decision to participate and those who cooperated with YAPs operating for a longer time period were more likely to say that they considered apprenticeship permanent. In the analysis for all employers outside New Jersey, the same positive relationship was found between the importance of stipends and permanence of apprenticeship. Thus, the relationship between importance of stipends and permanence of apprenticeship existed for <u>all</u> employers for whom these data were available, not just for those employers without previous apprenticeship experience.

TABLE 5-13

Metric Regression Weights Summarizing the Effects of Employer and Program Characteristics on Satisfaction With the Projects and Permanence of Apprenticeship

Effects by Subgroup	Satisfaction with the YAP		Permanence of Apprenticeship	
All Employers	(N = 308)		(N = 308)	
	Total	Direct	Total	Direct
Number of Employees (in 100's)	.000	.003	.003	.004
Manufacturing Firm	.013	.006	.109*	.106*
Union Firm	.050	.134	.062	.095
Previous Apprenticeship Experience	-.085	-.046	.085	.101
Financial Incentives Necessary	-.024	-.066	.105	.088
Aware of Expected Retention	-.100	-.098	.063	.064
Years Operated	.288*	.288*	.113*	.113*
Multiple R	.235		.259	
Employers Outside New Jersey Without Previous Apprenticeship Experience	(N = 185)		(N = 185)	
	Total	Direct	Total	Direct
Number of Employees (in 100's)	.007	.008	.005	.005
Manufacturing Firm	-.039	-.068	.106	.094
Union Firm	.201	.161	.073	.057
Importance of Stipends	.086	.025	.130*	.105*
Aware of Expected Retention	-.032	.081	.072	.118
Years Operated	.414*	.414*	.168*	.168*
Multiple R	.340		.374	

* Weight at least twice its standard error.

It was noted previously that the relationship between the number of years operated and satisfaction with the YAPs was stronger for those employers without previous apprenticeship experience. Similarly, the relationship between the number of years operated and permanence of apprenticeship was stronger for those employers without previous apprenticeship experience. Thus, the number of years operated is consistently correlated with both of the relatively "soft" outcome indicators within both analytic subgroups and that the relationship between the number of years operated and both outcome measures is consistently stronger for those employers without previous apprenticeship experience. This means that the most important factor which could be identified in gaining the support of employers was the length of time that the YAP had been in operation, and that the importance of this factor was even greater for those employers without previous apprenticeship experience.

Table 5-14 presents multiple regression results for two relatively "hard" outcome measures, i.e., the number of apprentices hired and the number of graduate apprentices still employed. For all employers, there was a significant, positive relationship between the number of years operated and the number of apprentices hired. This simply means that employers who cooperated with the older YAPs were likely to have hired a greater number of student apprentices. For those employers outside of New Jersey without previous apprenticeship experience, the number of apprentices hired was negatively related with the importance of stipends and positively related with the number of years operated. Thus, employers without previous apprenticeship experience who did not consider stipends to be important in their decision to participate and who cooperated with YAPs which had been in operation longer were likely to have hired a greater number of student apprentices.

TABLE 5-14

Metric Regression Weights Summarizing the Effects of Employer and Program Characteristics on Employment and Retention of Student Apprentices

Effects by Subgroup	Number of Apprentices Hired		Number of Graduate Apprentices Still Employed	
All Employers	(N = 308)		(N = 301)	
	Total	Direct	Total	Direct
Number of Employees (in 100's)	.044	.056	.036*	.039*
Manufacturing Firm	.337	.305	.423*	.404*
Union Firm	.453	.826	.640	.722*
Previous Apprenticeship Experience	-.328	-.150	-.148	-.104
Financial Incentives Necessary	-.044	-.232	-.165	-.223
Aware of Expected Retention	-.359	-.349	.053	.070
Years Operated	1.286*	1.286*	.328*	.328*
Multiple R	.220		.265	
Employers Outside New Jersey Without Previous Apprenticeship Experience	(N = 185)		(N = 175)	
	Total	Direct	Total	Direct
Number of Employees (in 100's)	.020	.024	.018	.016
Manufacturing Firm	.313	.172	.213	.085
Union Firm	3.013*	2.817	2.498*	2.364*
Importance of Stipends	-.490	-.787*	-.269*	-.269*
Aware of Expected Retention	-1.411	-.859	.275	.275
Years Operated	2.015*	2.015*	.550*	.550*
Multiple R	.343		.373	

* Weight at least twice its standard error.

For employers outside New Jersey without previous apprenticeship experience, firms which were unionized showed a positive relationship with the total number of apprentices hired in terms of total effects, but not in terms of direct effects. For this analytic subgroup, the influence of the union firms on apprentices hired can be considered statistically significant, but was mediated through the number of years operated. Results for all employers without previous apprenticeship experience revealed a significant, positive relationship between the number of apprentices hired and whether the business was a union firm, both for total effects and direct effects. Thus, it may be concluded that the union firms and the number of years operated generally had a positive effect on the number of apprentices hired for employers without previous apprenticeship experience.

The number of apprentices hired may be considered an intermediate outcome because it represents an important step in achieving the goals of the demonstration project. However, if employers hired large numbers of student apprentices but did not retain them after graduation, an ultimate outcome in terms of the project goals has not been achieved. Therefore, the number of graduate apprentices still employed may be regarded as the most important outcome indicator included in the employer data.

For all employers, there were positive relationships between the number of graduate apprentices still employed and the number of employees, the manufacturing firms, the union firms, and the number of years operated. Thus, employers who were more likely to currently employ graduate apprentices were those who had larger numbers of employees, those who were engaged in manufacturing, those whose employees were represented by a union, and those who had cooperated with YAPs which had been in operation longer.

For employers outside of New Jersey without previous apprenticeship experience, the pattern was somewhat different. For this analytic subgroup, the number of graduate apprentices still employed was positively related with the union firms and the number of years operated, and negatively related with the importance of stipends. For employers without previous apprenticeship experience, therefore, those who were more likely to have graduate apprentices still employed were those whose employees were represented by a union, those who did not consider stipends to be an important factor in their decision to participate, and those who cooperated with older YAPs.

The data presented in Table 5-14 require some technical clarifications. The regression results for the number of graduate apprentices still employed would be somewhat different if the number of apprentices hired had been used as an independent variable in the regression model for this outcome. This indicator was not employed as an independent variable in the results reported in Table 5-14, because the number still employed is a subset of the total number of apprentices hired. It is not advisable to include such "part-whole" relationships in multiple regression analysis because technical distortions can be introduced that produce difficulties in interpretation.

Nevertheless, the data presented in Table 5-14 have their own set of difficulties of interpretation. To clarify these issues, regression results, which included the number of apprentices hired as a final variable in the equation for the number of graduate apprentices still employed, were obtained. They will be discussed briefly to help guide the interpretation of the data just presented. When the number of apprentices hired was introduced into the regression equation for the number of graduate apprentices still employed, the significant influence of the number of years operated was eliminated,

whereas the significant influences of the other three factors were not substantially affected. This finding suggested that the influence of the number of years operated upon the number of graduate apprentices still employed mainly reflected the impact of the number of years operated on the total number of apprentices hired.

When the same procedure was applied to the employers outside New Jersey without previous apprenticeship experience, the results were more intricate. Three factors (if union firm is included) significantly influenced the number of apprentices hired for these employers. The same three factors significantly influenced the number of graduate apprentices still employed. When the number of apprentices hired was added to the regression equation predicting the number of graduate apprentices still employed for this subgroup, the significant influence of the union firms was not affected but the significant influences of the other two indicators were eliminated. This pattern suggested that the influences of the importance of stipends and the number of years operated primarily reflected the influence of these variables on the number of apprentices hired, and that employers who considered stipends important were less likely to have graduate apprentices still employed mainly because they hired fewer apprentices in the first place. Such employers <u>may</u> not have been significantly less likely to retain the apprentices that they had hired.

Results for employers outside New Jersey without previous apprenticeship experience suggested a similar pattern for the role of stipends. Employers without previous apprenticeship experience who considered stipends important tended to be smaller employers and tended to hire relatively low numbers of apprentices. Because they had hired relatively low numbers of apprentices,

they also tended to have relatively low numbers of graduate apprentices still employed. It appears, therefore, that employers who started apprenticeship programs largely because of stipends made minimal contributions to the success of the program in terms of the number of graduate apprentices still employed.

5.4.3 Implications of Multivariate Results

Several important implications follow from the results presented in the previous subsection. Some of these implications relate mainly to USDOL policy regarding the YAPs, while other implications relate primarily to the operations of the YAPs themselves. These implications can be viewed most clearly in terms of the independent variables which had statistically significant relationships with the various outcomes.

Two of the independent variables whose effects were examined in the previous subsection may be considered program features and, hence, have the greatest potential relevance for USDOL policy formulation. These two variables are the number of years operated and the importance of stipends. As previously noted, the number of years of operation was a consistent factor in influencing positive employer outcomes, such as satisfaction with the projects, permanence of apprenticeship, and number of apprentices hired. It is clear that the most important thing that can be done in order to generate positive outcomes with employers is to maintain project operations over a relatively long period of time. Moreover, these results suggest the largest gains occurred between the second and third years of operation, for most of the employers interviewed fell within these two time categories. The results suggest that, with respect to employers, it may take 3 years before projects of this type may be considered fully operational.

The other factor which has relevance for USDOL policy formulation is the role of stipends in generating positive outcomes. For this factor, the results are not as consistent as they are for the number of years of operation. The importance of stipends was positively related to the reported permanence of apprenticeship. That is, employers who tended to say that stipends were an important factor in their decision to participate also tended to say that they considered apprenticeship permanent. On the other hand, employers without previous apprenticeship experience who tended to say that stipends were an important factor in their decision to participate also tended to hire fewer student apprentices and, consequently, tended to have fewer graduate apprentices still employed at the time of interview.

On balance, the findings concerning the influence of stipends must be considered negative for three reasons. First, what employers said about the permanence of apprenticeship is not as important as what they did in terms of hiring and retaining student apprentices. It follows that the positive effect of stipends upon the permanence of apprenticeship, as reported by all employers, is not as important as the negative effect of stipends upon the number of apprentices hired and retained, as reported by employers without previous apprenticeship experience.

The second reason that the results concerning stipends should be considered negative relates to the USDOL's expectations that stipends might be a significant incentive that would induce employers without previous apprenticeship experience to adopt apprentic nip as a system of training. The results presented here did indicate that the effects of stipends were stronger for employers without previous apprenticeship experience. However, the data also suggested that stipends appealed to a rather narrow sector of

the employers who lacked previous apprenticeship experience, and the data indicated clearly that this sector provided very low "payoff" in terms of the number of graduate apprentices still employed.

The third and final reason that the results concerning stipends should be considered negative is that provision of stipends represented a very large commitment of financial resources within the overall funding of the demonstration effort. The data presented here suggested strongly that the benefits derived from the provision of stipends were not commensurate with their cost. Presuming the same overall level of funding under both alternatives, it is not unreasonable to conclude that greater returns could be generated by keeping projects of this type in operation for a longer period of time without stipends than by keeping such projects in operation for a shorter period of time with stipends.

Three of the independent variables whose effects were examined in the preceding subsection may be considered employer characteristics and, hence, have implications for the operations of the YAPs. These three variables are the union firms, the manufacturing firms, and the number of employees. Results indicated that all these features of employing organizations were associated with positive outcomes and, therefore, that this information could be used to help target those employers with the greatest potential for positive outcomes.

The representation of employees by a labor union was positively related to the number of apprentices hired and retained by employers without previous apprenticeship experience. Therefore, it may be concluded that employing organizations that have collective bargaining status but do not have experience with apprenticeship represent promising prospects for YAPs.

Manufacturing firms and businesses with larger numbers of employees tended to retain greater numbers of apprentices. The data indicated that such firms tended to have previous experience with apprenticeship. Thus, when seeking to place student apprentices with firms with previous apprenticeship experience, the best results may be obtained with the larger firms engaged in manufacturing.

CHAPTER 6: CONCLUSIONS

The preceding chapters of this report have provided descriptions and analyses related to the characteristics, perceptions, and experiences of student and employer participants in the USDOL's Youth Apprenticeship Demonstration. As a research study of impacts, this Phase II report has examined the data for evidence of outcomes attributable to program participation. In particular, the outcomes have been keyed toward aspects related to the three major goals of the Youth Apprenticeship Demonstration:

- To demonstrate the feasibility of apprenticeship-school linkages by facilitating the in-school employment of youth in registered apprenticeship positions;
- To promote the use of registered apprenticeship as a system of training for the skilled trades among employers with employees in apprenticeable occupations; and
- To ease the school-to-work transition of youth by initiating youth employment in apprenticeship occupations during the high school years, thus providing job continuity following high school graduation.

Chapter 6 of the Phase II report presents specific conclusions regarding the Phase II findings and provides a brief discussion of each of the conclusions. This final chapter consists of three summary sections: (1) experiences and impacts for student apprentices; (2) experiences and impacts for participating employers; and (3) major implications of the research.

6.1 EXPERIENCES AND IMPACTS FOR STUDENT APPRENTICES

Impacts for student apprentices were assessed in Chapter 3 by examination of the apprenticeship experiences and post-high school labor market experiences of respondents from the high school classes of 1978, 1979, and 1980. Chapter 4 presented findings from an apprentice-comparison study of net

program impacts for apprentices and a constructed control group of 1979 and 1980 high school graduates. Findings from both Chapter 3 and Chapter 4 have been considered on conclusions in this section. The following outcomes of the Youth Apprenticeship Demonstration, therefore, are noteworthy for the student apprentice program participants:

- Students who participated in the YAPs reported higher levels of job satisfaction in their current or most recent employment than comparison students;
- Student participants in the YAPs tended to be more occupationally stable than comparison students;
- Students who participated in the YAPs did not, as a group, earn significantly higher wages in their post-high school jobs than comparison students;
- Those student apprentices who stayed with their apprenticeships after high school tended to be better job performers;
- Students who participated in the YAPs reported very high levels of satisfaction and strongly endorsed the project; and
- Student participants in the YAPs did not, as a group, exhibit different or fewer school-to-work transition problems than comparison students.

Each of these conclusions is briefly discussed in the following subsections.

6.1.1 Students Who Participated in the YAPs Reported Higher Levels of Job Satisfaction in Their Current or Most Recent Employment Than Comparison Students

As a group, the student apprentices were significantly more satisfied with their current or most recent employment than a similar group of nonparticipants. Further, the generally high levels of job satisfaction tended to hold whether or not the program participants were still employed in apprenticeship positions. This latter finding suggests that the student apprenticeship experience may serve as an effective in-school device for screening some students out of apprenticeship. Although retention of the participants

in apprenticeships would be more desirable, attrition during the school years is less costly to both employers and registered apprenticeship than later attrition.

6.1.2 Student Participants in the YAPs Tended to Be More Occupationally Stable Than Comparison Students

Youth who participated in student apprenticeships were more likely than comparison students to be currently or most recently employed in occupations for which they trained in high school. In other words, there was a greater degree of continuity for the YAP participants between the type of vocational training in high school and the area of later employment. This finding has important implications, not only for youth in their continuity between high school training and later employment, but also for the schools providing such training.

6.1.3 Students Who Participated in the YAPs Did Not, as a Group, Earn Significantly Higher Wages in Their Post-High School Jobs Than Comparison Students

No significant differences were found between the student apprentice group and a similar group of comparison students in current hourly wages, hours worked per week, or annualized incomes. It may have been that it was too soon for wage differences to emerge between YAP participants and comparison students. The direction of the wage differential between apprentices and comparison students was in favor of the apprentice group, but the wage differences were not significant.

6.1.4 Those Student Apprentices Who Stayed With Their Apprenticeships After High School Tended To Be Better Job Performers

According to job performance evaluations done by work supervisors of the student apprentices, program participants who stayed with their apprentice-

ship positions tended, as a group, to be better workers than participants who left their apprenticeships. In other words, there was a tendency for the poorer job performers to leave their apprenticeship positions and the better performers to stay in their apprenticeships. The positive relationship between apprenticeship retention and better job performance is one of the more important findings of the impacts assessment. Whether persisters in apprenticeship performed better on the job because they persisted as apprentices or better job performers just tended to stay with their apprenticeships, the positive relationship between performance and retention is important. For example, such results suggest that voluntary terminations in the YAPs as a whole do not drain off the better workers from apprenticeship.

6.1.5 Students Who Participated in the YAPs Reported Very High Levels of Satisfaction and Strongly Endorsed the Project

Ninety-six percent of the randomly selected apprentices reported in post-high school interviews that they would recommend apprenticeship to a friend. Even 95 percent of those who left their apprenticeship positions reported a similar endorsement of apprenticeship. Ninety-five percent of the student apprentices also reported that the YAPs were "very" or "somewhat successful" in helping students in the school-to-work transition. Further, even with probes by the interviewers to name a disadvantage of being a student apprentice, half of the apprentices stated that there were no disadvantages.

Attitudes of the student participants about the worth of the YAPs and the student apprenticeship experience can be considered somewhat "soft" indicators of impact. However, the YAP student participants (some of whom were interviewed up to 3 years after their apprenticeship experience) gave exceptionally high endorsements. The results suggest that even the

student apprentices who discontinued participation felt that they gained from the experience.

6.1.6 Student Participants in the YAPs Did Not, as a Group, Exhibit Different or Fewer Problems in School-to-Work Transitions Than the Comparison Students

In terms of the school-to-work transition, the Phase II research results suggest that: (1) not all youth experience problems in the school-to-work transition (about one-third of the study samples did not); and (2) there may be a fairly common set of transition problems that will occur with most youth in the post-high school years, whether or not they have in-school work experiences. Although 13 percent more of the apprentice group than the comparison group reported staying with the job they held during high school after they were graduated, the study results do not indicate that there were any fewer transition "problems" with this group.

6.2 EXPERIENCES AND IMPACTS FOR PARTICIPATING EMPLOYERS

This section discusses the conclusions which may be derived from the Phase II research concerning the role of the participating employers in the Youth Apprenticeship Demonstration. Detailed results concerning employers were presented in Chapter 5. The principal conclusions are as follows:

- The organizations which employed student apprentices generally were very small businesses which did not have union representation of their workforce and did not have prior experience with apprenticeship;
- Employers who cooperated with YAPs were attracted more by the program's emphasis upon screening and training of entry level workers than they were by the stipends offered;
- Employers who cooperated with YAPs expressed an extremely high level of satisfaction with the projects;

- The single most important factor in generating positive outcomes with employers was the number of years that the YAPs had been in operation;
- The stipends provided to employers by the YAPs did not generate positive outcomes commensurate with their cost;
- Employers with prior apprenticeship experience were more likely to consider apprenticeship permanent and to provide related instruction for graduate apprentices;
- Results suggest that, for employers without prior apprenticeship experience, YAP participation reduced the influence of negative stereotypes concerning young workers; and
- The YAPs have contributed to the expansion of apprenticeship both in terms of program and apprentice registrations.

These conclusions are discussed briefly in the subsections that follow.

6.2.1 The Organizations Which Employed Student Apprentices Generally Were Very Small Businesses Which Did Not Have Union Representation of Their Workforce and Did Not Have Prior Experience With Apprenticeship

The research results reveal clearly that the YAPs served very small businesses. Over three-fourths of the employers who cooperated with the projects had less than 50 employees. Fully 90 percent of all employers did not have union representation of their workforce. Over two-thirds of the employers did not have prior experience with apprenticeship. These characteristics for participating employers were not in any way targeted in the design of the Youth Apprenticeship Demonstration. Therefore, it is an interesting and important finding of the research effort that employers with these characteristics generally were the ones who were most receptive to employing student apprentices and/or were most intensively recruited by the YAPs.

6.2.2 Employers Who Cooperated with YAPs Were Attracted More by the Program's Emphasis Upon Screening and Training of Entry Level Workers Than They Were by the Stipends Offered

Over three-fourths of the employers reported that the most important consideration in their decision to participate related, in some way, to training and screening of workers. By contrast, only 10 percent of the employers reported that an economic advantage, such as receipt of stipends, was the most important consideration in their decision to participate. Similarly, only one-fourth of the employers rated stipends as a "very important" factor in their decision to participate, while over three-fourths of the employers indicated that they would have participated even if stipends had not been available. The clear testimony of the employers is that they place a very high value on the YAPs' services in recruiting and screening pre-trained, entry-level candidates, and in assisting employers with ongoing training of these workers. Conversely, the employers just as clearly testify that they place a relatively low value upon the direct financial incentives available from the YAPs.

The experience of the New Jersey YAP provides further evidence of the marginal contribution made by stipends in motivating employers to cooperate with the demonstration effort. The New Jersey Project never has provided stipends to participating employers. Despite the lack of stipends, the New Jersey Project has generally recruited employers and placed apprertices as well as the YAPs.

Because of the absence of stipends, the New Jersey YAP has promoted the use of the Targeted Jobs Tax Credit as an incentive for participating employers. The research results reveal that one-half of the participating employers in New Jersey have made use of the Targeted Jobs Tax Credit. By

comparison, slightly over one-fourth of the participating employers at all the other YAPs had used this tax incentive. Accordingly, it is obvious that one-half of the participating employers in New Jersey cooperated with the YAP without any form of financial incentive. Further, the difference between the New Jersey Project and the other projects in use of the Targeted Jobs Tax Credit is surprisingly small, in light of the difference in the availability of stipends.

The testimony of the employers concerning the importance of training and screening and the unimportance of stipends, along with the experience of the New Jersey YAP, all point to the same basic conclusion: most participating employers did not cooperate with YAPs primarily because of the availability of stipends. Rather, it seems clear that most employers became involved because the projects provided services with respect to screening and training of entry-level workers.

6.2.3 Employers Who Cooperated With YAPs Expressed an Extremely High Level of Satisfaction With the Projects

Over 90 percent of the participating employers reported that they were satisfied with the YAPs and over 50 percent of them reported that they were very satisfied with the projects. Similarly, 90 percent of the participating employers favored continued Federal funding of the demonstration projects. Nearly two-thirds of the employers reported that they had recommended the projects to other employers and over one-half of the employers rated the student apprentices that they had employed as "better than" other young workers whom they had encountered previously. These findings, combined with those concerning the relatively low priority which the employers attach to stipends, underscore the importance which the employers give to the services provided by the YAPs.

6.2.4 The Most Important Single Factor in Generating Positive Outcomes with Employers Was the Number of Years That the YAPs Had Been in Operation

Multiple regression analysis revealed that the number of years that the local project had been in operation was the most consistent predictor of the principal outcome measures. These included the employers' assessment of the permanence of apprenticeship and the number of student apprentices still employed by participating employers after high school graduation. The positive effect of years of operation was consistently stronger for those employers without prior apprenticeship experience. The results concerning years of operation indicated clearly that the most important single thing that the YAPs did to generate positive outcomes with employers was to maintain operations over a relatively long period of time.

The very strong effect of years of operation was based principally upon differences between the three projects which had operated for 3 years and the four projects which had operated for 2 years, at the time of interview. These results suggest that, with regard to employers, the projects did not achieve operational maturity until at least the third year of operation. Since data were not available for projects which have been in operation for more than 3 years, it was not possible to determine the point at which this "operational maturity curve" would level off. It was only clear from the present data that this curve still was rising sharply between the second and third years of operation.

6.2.5 The Stipends Provided to Employers by the YAPs Did Not Generate Positive Outcomes Commensurate With Their Cost

As described previously in this section, the stipends which were made available through seven of the eight YAPs did not provide a powerful incentive for employers to cooperate with the projects. Further, research results

also revealed that the role of the stipends in generating positive outcomes was not uniformly positive. Multiple regression analysis was used to determine the relationship between the importance that an employer attached to stipends and the outcomes achieved by that employer. Employers who considered stipends an important factor in their decision to participate were more likely to consider apprenticeship a permanent part of their approach to training. On the other hand, those employers who considered stipends important also were less likely to hire, and hence retain, student apprentices. These somewhat equivocal results tend to be negative, on balance, due to the greater importance of the number of apprentices hired and retained as an outcome and because of the considerable amount of resources devoted to stipends in the demonstration effort.

It is possible to combine the perspective on stipends as an incentive to participation with the perspective on stipends as a predictor of outcomes, in order to derive some basis to assess the stipends as a cost component of the Youth Apprenticeship Demonstration. The previous discussion of stipends as an incentive to participation indicated that roughly one-fourth of the participating employers considered stipends very important and would not have participated in the demonstration effort if stipends had not been available. The present discussion has revealed that those who considered stipends very important made a contribution to the hiring and retention of apprentices that was significantly less than their share. Therefore, unless the stipends constitute significantly less than one-fourth of the total amount of funds expended by the demonstration projects, the outcomes generated by the stipends cannot be considered commensurate with their costs.

While a detailed breakdown of the proportion of YAP expenditures devoted to stipends is not yet available for analysis, the initial budgetary allocations for stipends were approximately 50 percent of total expenditures. While it is anticipated that stipends will constitute a considerably smaller proportion of actual expenditures than of the originally budgeted expenditures, it is possible to presume at this point that stipends will not account for significantly less than one-fourth of the total expenditures for the seven projects which used stipends. Based upon this assumption, it is possible to conclude that the stipends have not generated outcomes commensurate with their cost.

The absence of strong and consistently positive associations between the importance of stipends and the principal outcome measures contrasts sharply with the presence of strong and consistently positive associations between the years of operation and the principal outcome measures. This comparison suggests that the general maintenance of project operations over time makes a far more important contribution to the achievement of positive outcomes than the specific provision of stipends. The contrast between the effect of years of operation and the effect of stipends suggests strongly that the funding priorities for any planned replication of the Youth Apprenticeship concept should emphasize provision of funds for relatively long-term basic operations alone, rather than provision of funds for short-term basic operations with stipends.

6.2.6 Employers With Prior Apprenticeship Experience Were More Likely To Consider Apprenticeship Permanent and To Provide Related Instruction for Graduate Apprentices

Over three-fourths of the employers with prior apprenticeship experience said that they considered apprenticeship a permanent feature of their approach to training, while two-thirds of the employers without prior apprenticeship experience said that they considered apprenticeship permanent. Similarly, just over three-fourths of the employers with prior apprenticeship experience reported that they had arranged related instruction for graduate apprentices, while only a little over one-half of those without prior experience reported similar arrangements. This higher level of commitment to apprenticeship in general and to related instruction in particular is a difference one would expect to find for employers who had prior experience with the apprenticeship system of training.

6.2.7 Results Suggest That, for Employers Without Prior Apprenticeship Experience, YAP Participation Reduced the Influence of Negative Stereotypes Concerning Young Workers

Well over one-half of the employers without prior apprenticeship experience thought that the projects were very successful in assisting young people with the school-to-work transition, while well under one-half of the employers with prior apprenticeship experience thought that the projects were very successful in this regard. Similarly, well over one-half of the employers without prior apprenticeship experience thought that the student apprentices were better than other young workers, while well under one-half of the employers with prior apprenticeship experience thought that the student apprentices were better than other young workers.

The results concerning somewhat higher levels of satisfaction on the part of employers without previous apprenticeship experience suggest that

the YAPs are reducing the influence of negative stereotypes which employers have concerning young workers. Basically, it appears that employers without previous apprenticeship experience are reporting a double reaction. First, they are reporting a favorable impression of the projects. Second, they are reporting a "pleasant surprise" concerning the job performance and the capacity for growth of the student apprentices.

It may be presumed that employers with previous apprenticeship experience are less likely to report a double reaction. Because of their experience with young workers within the apprenticeship framework, they are more familiar with the level of performance and the capacity for growth which may be expected from young workers. This familiarity may result in their reactions being directed more specifically toward the YAPs, since these employers are less likely to be "pleasantly surprised" at the performance and growth capacity of young workers.

Based upon these assumptions, it may be concluded that the reactions of employers with previous apprenticeship experience represent a more sober and more direct assessment of project performance. Conversely, the reactions of employers without previous apprenticeship experience seem to reveal a reduction in the influence of negative stereotypes concerning young workers. A logical extension of this conclusion is that the subsequent decisions of these employers concerning the hiring and training of young workers are more likely to be influenced by their own, direct (and, evidently, positive) experience with young workers and are less likely to be influenced by their negative stereotypes.

6.2.8 The YAPs Have Contributed to the Expansion of Apprenticeship Both in Terms of Program and Apprentice Registrations

Over two-thirds of the employers who cooperated with YAPs did not have prior experience with apprenticeship. Therefore, the basic recruiting pattern with respect to employers strongly favored the expansion of the apprenticeship training system. In addition, the majority of these new sponsors of apprenticeship said that they considered apprenticeship to be a permanent feature of their approach to training. Overall, just under half of the employers who cooperated with YAPs did not have previous experience with apprenticeship and considered apprenticeship to be a permanent feature of their approach to training.

As of June 30, 1980, the YAPs reported that, since the inception of the demonstration effort, they had registered a total of 989 apprenticeship programs and a total of 2,116 apprentices. This time frame coincides very closely with the time frame for the research effort. Therefore, the statistics derived from the research effort may be applied to the reported total number of programs and apprentices registered, in order to construct estimates of the number of program and apprentice registrations which may be attributed to the YAPs during the 1977-78, 1978-79, and 1979-80 school years.

Research results indicate that, of all the apprenticeship programs registered by sampled employers, 55 percent were registered by employers without previous apprenticeship experience. Applying this percentage to the reported total of 989 apprenticeship programs registered, it may be estimated that 544 programs were registered under the YAPs by employers who did not have prior apprenticeship experience.

A similar procedure may be applied to the number of apprentices registered. Research results indicate that, of all the apprentices registered by sampled employers, 70 percent were registered by employers without prior apprenticeship experience. Applying this percentage to the reported total number of 2,116 apprentice registrations, it may be estimated that 1,481 apprentices were registered by employers who did not have prior experience with apprenticeship.

The number of apprentices hired by employers without prior apprenticeship experience provides an estimate of the number of apprentices who would not have been registered without the activities of the YAPs. It is possible that some of the other apprentice registrations recorded by employers with prior apprenticeship experience would not have occurred without the activities of the YAPs, but no estimate in this area can be provided. Conversely, it also is possible, but less likely, that some of the employers without prior apprenticeship experience would have begun using apprenticeship in the absence of the YAPs. Therefore, the estimate of the net impact of the YAPs in terms of the number of new apprentices registered may be regarded as conservative. Overall, the estimates for the numbers of programs and apprentices added to the apprenticeship system indicate that the YAPs have generated modest but tangible increases in the number of programs and the number of apprentices in the apprenticeship system.

6.3 MAJOR IMPLICATIONS OF THE RESEARCH

This section presents three overall conclusions which relate to the basic functions and features of the demonstration effort as a whole, rather than to specific components of the YAPs. These three conclusions are as follows:

- The linkage between employers and schools provides a labor exchange serving small businesses seeking skilled workers and young workers seeking career opportunities in skilled trades;

- The linkage between employers and apprenticeship provides student apprentices with an assurance of potential for career advancement and provides employers with a mechanism that facilitates continued skill development of entry level workers; and

- Based upon careful consideration of appropriate locations and strategies for implementation, the positive outcomes of the Youth Apprenticeship Demonstration can be achieved at a considerable reduction in direct program cost.

These conclusions are discussed briefly in the subsections which follow.

6.3.1 The Linkage Between Employers and Schools Provides a Labor Exchange Serving Small Businesses Seeking Skilled Workers and Young Workers Seeking Career Opportunities in Skill Trades

The service provided by the YAPs which was most valued by participating employers and student apprentices was that of a specialized labor exchange. Through the YAPs, employers were able to identify candidates for entry-level employment who had a number of desirable characteristics. First, the student apprentices referred by the YAPs usually had received some vocational training in areas related to the position which the employer was seeking to fill. Second, the student apprentices who were referred to employers usually had been screened by school personnel with respect to their suitability for the position to be filled. This screening generally was quite informal and may have been performed by a vocational instructor, a cooperative education coordinator, or a guidance counselor. The criteria employed in the screening may have included the student's aptitude for the particular trade, as well as the student's interest in pursuing a career opportunity in the trade area.

Whatever member of the educational system did the screening, and whatever criteria were employed in this process, the screening usually was based upon

first-hand, in-depth knowledge of the candidate's abilities and achievements. Small employers generally found that this service from within the school system was of great value to them. Most of the employers who cooperated with YAPs were not large enough to have their own personnel units. In addition, they evidenced the conviction that public and private employment agencies had neither sufficient clarity of focus concerning their particular needs nor adequate familiarity with the qualifications of prospective candidates for employment. Further, many employers expressed a preference to hire and train young workers from the outset, before other employment contributed to the development of work habits which the participating employers considered to be inherently unsatisfactory or unsuited to their particular production processes. For all these reasons, employers who cooperated with YAPs appeared to be very satisfied with the specialized labor exchange function, which the projects fulfilled.

Student apprentices also evidenced considerable satisfaction with the intermediary role that the YAPs have played. It is reasonable to assume that, in the absence of the YAPs, student apprentices would have had considerable difficulty in locating the positions that they filled. Many of these student apprentice positions would not have been advertised in the newspapers, nor would they have been available through public or private employment agencies. Additionally, since most of the employing organizations were so small, it is doubtful that student apprentices looking for work would have considered the firms to be likely contacts for employment, based upon examination of such sources as the Yellow Pages of the local telephone directory. Finally, student apprentices received additional assistance by having

the opportunity to begin employment during high school and to continue that employment following graduation.

In summary, the YAPs generally have helped to establish a network of relationships between small employers and the vocational education sector of the various local school districts which have cooperated with the projects. It appears that the employers and the student apprentices have been the primary beneficiaries of these newly established networks, along the lines previously described. However, the educational systems also appear to have benefitted from the establishment of these linkages. First, school personnel seemed gratified to participate in providing high quality, in-school employment for students, with the possibility for continued employment following graduation. Second, it appears that participating employers developed renewed respect for school personnel as a consequence of their help in meeting employers' skilled labor needs.

6.3.2 The Linkage Between Employers and Apprenticeship Provides Student Apprentices With an Assurance of Potential for Career Advancement, and Provides Employers With a Mechanism That Facilitates Continued Skill Development of Entry-Level Workers

The principal factor which distinguishes the YAPs from other school-to-work efforts, such as cooperative education and work experience, is the inclusion of in-school apprenticeship. The employer's registration of apprenticeship standards provides student apprentices with a measure of assurance that the position available is not a "dead-end" job that lacks opportunities for continued skill development and advancement. Similarly, the apprenticeship registration agreement signed by the student apprentice and the employer assures each student apprentice with satisfactory job performance of an opportunity for continued employment after high school.

Finally, the basic provisions of apprenticeship assist the employer in promoting student apprentices' continued skill development. Prominent among these provisions are specification of a job rotation sequence for on-the-job training, establishment of a wage progression schedule, provision of related instruction, and attainment of a certificate of completion for the applicable skilled trade. Clearly, therefore, apprenticeship is a key element in the employment agreement subscribed to by the employer and the student apprentice.

6.3.3 Based Upon Careful Consideration of Appropriate Locations and Strategies for Implementation, the Positive Outcomes of the Youth Apprenticeship Demonstration Can Be Achieved at a Considerable Reduction in Direct Program Cost

Seven of the eight YAPs followed the same basic program design, which included payment of stipends to participating employers and employment of salaried project staff members directly responsible for coordinating the involvement between schools and employers. The design of the New Jersey YAP differed from the other projects with respect to both of these features. First, the New Jersey YAP did not include stipends for participating employers and, instead, promoted use of the Targeted Jobs Tax Credit. Second, the New Jersey Project did not include funds for salaried field staff operating at the local level. Instead, this project included funds only for a small coordinating staff at the State level. Direct responsibility for coordinating the activities of local employers and schools was assigned to the existing network of Cooperative Industrial Education (CIE) Coordinators. Thus, the YAP did not provide funds for the salaries of these local staff members, who promoted the Youth Apprenticeship concept in conjunction with their routine contacts to employers concerning cooperative education.

Despite these sharp differences in the design of the New Jersey Project, the results reported regularly to the Department of Labor and the results of the present research effort indicate that the outcomes generated by the New Jersey Project are generally comparable to the results generated by the other YAPs, in terms of impacts upon student apprentices and employers. However, the novel design of the New Jersey YAP does account for the substantial differences in direct cost between the other YAPs and the New Jersey Project.

Total Federal dollar cost per student apprentice was computed for each YAP from its inception through June 30, 1980.[1] This time frame coincides very well with the time frame of the research effort. Additionally, this was the expiration date for the original contracts of five of the seven active YAPs. Thus, the cost computations are based upon final cost figures for one project (Houston), nearly final cost figures for the five active projects whose original contracts expired on June 30, 1980, and interim cost figures for the two active projects whose original contracts were extended beyond June 30, 1980. For the seven YAPs with common program design features (all those except the New Jersey Project), the average Federal dollar cost per student apprentice was $1,552. Among these projects, the least expensive project cost per student apprentice was $1,136, while the most expensive project cost per student was $3,024. By contrast, the Federal dollar cost per student apprentice for the New Jersey project was $300. Obviously, this

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[1]The "cost per student apprentice" is a program cost indicator, which is generally comparable to the "cost per placement" indicator commonly computed for other employment and training programs. For the present research, other cost indicators, such as "cost per apprenticeship program," could have been computed as well. It was determined, however, that "cost per student apprentice" is generally the most useful, since it provides results which are comparable to the results of research on other employment and training programs.

difference in cost is dramatic, particularly in light of the fact that the outcomes for the New Jersey Project appear to be generally comparable to the outcomes achieved by the other YAPs.

Based upon the discussion presented above, it is possible to conclude that at least one YAP operated successfully at a considerably lower Federal dollar cost per student apprentice than the other YAPs. However, these results are not intended to imply that the approach followed in New Jersey can be followed successfully at a large number of other locations. A key factor in the success of the approach followed in New Jersey is the very strong leadership exerted by the New Jersey Department of Education, particularly in the areas of vocational education, cooperative education, and apprenticeship. In fact, the role of the New Jersey Department of Education in apprenticeship is completely unique for a State Department of Education. Therefore, it is important to note that there may well b major constraints upon the replicability of the New Jersey Youth Apprenticeship model in other locations.

Despite the cautions to be observed in interpreting the specific cost experience of the New Jersey YAP, it still is possible to conclude that the positive outcomes of the Youth Apprenticeship Demonstration may be derived at a considerably lower cost per student apprentice than those achieved by the other YAPs. The experience of the Youth Apprenticeship Demonstration indicates that the first consideration in successful implementation of a project of this type is selection of a favorable location. For a variety of reasons, some locations provide a fertile environment for this type of project while other locations do not. The second consideration in the successful implementation of a YAP is selection of the most economical

implementation strategy suitable to the specific local context. Evidently, the New Jersey YAP was well-conceived with regard to both of these considerations.

The two general principles described above can be applied to the initiation of new YAPs or the continuation of existing YAPs. Provided that the necessary time is allowed for positive outcomes to accumulate, it should be possible to achieve these outcomes at a considerably lower cost per student apprentice than was achieved by the seven projects, whose budgets included stipends for employers and a relatively high level of funding for field staff.

The conclusion presented here concerning potential cost reductions is not intended to be a criticism of specific projects or of the demonstration effort as a whole. Rather, this conclusion attempts to draw upon the experience of the demonstrations to guide future replication of the Youth Apprenticeship concept. The primary purpose of a demonstration effort is to test the feasibility and efficacy of a programmatic concept. At this early stage of development it is not reasonable to expect maximum economy or efficiency of operation. Just as automobile manufacturers build very expensive "prototypes" in advance of production, so Federal agencies are wise to conduct demonstration efforts in advance of anticipated replication.

APPENDIX A:

OUT-OF-SCHOOL APPRENTICE/COMPARISON
INTERVIEW SCHEDULE

OMB# 44-S-80004
Expires January 1981

CSR, Incorporated
805 15th Street, N.W., Suite 500
Washington, D.C. 20005
(202) 842-7600

OUT-OF-SCHOOL APPRENTICE/COMPARISON INTERVIEW SCHEDULE

INSTRUCTIONS

This interview schedule consists of four sections:

- Section I - Educational Experiences
- Section II - Apprenticeship Experiences
- Section III - Employment Experiences
- Section IV - Demographic/Family Background Information

The schedule is designed to be conducted with former student apprentices from the high school classes of 1978, 1979, and 1980 and selected non-apprenticed comparison students from the high school classes of 1979 and 1980.

All sections (I through IV) are to be completed with the former student apprentices. Sections I, III and IV (omitting Section II) are to be completed with the non-apprenticed comparison group.

Questions are to be asked sequentially of all respondents. Skip patterns, e.g., [SKIP TO Q. 15], on the response categories are designed so that the interview schedule can accommodate respondents who have had significantly different experiences.

CSR, INCORPORATED

OUT-OF-SCHOOL
APPRENTICE/COMPARISON
INTERVIEW SCHEDULE

FOR OFFICE USE ONLY

Sample Site No. _____

ID No. _____

Log Date _____ By _____

Edit Date _____ By _____

Code Date _____ By _____

Name of Respondent [PRINT] _____
(Last) (First) (MI)

Home Address [PRINT] _____
(No.) (Street) (Apt. #)

_____
(City) (State) (Zip)

Telephone Number ( ) _____
(Area)

Location of Interview _____

Date of Interview _____

Time Started _____ AM PM

Time Completed _____ AM PM

Interviewer _____

VERIFICATION

Date _____ Time _____ AM PM

Provided by 1. Respondent 2. Other (Specify) _____

Verified by _____

Comments _____

_____ Apprentice Respondent

_____ Comparison Respondent

CONTACT LOG

Contact Number	Date	Time	Type of Contact (Check one)	Result Code*	Interviewer
1		AM PM	_____ Telephone _____ Home		
2		AM PM	_____ Telephone _____ Home		
3		AM PM	_____ Telephone _____ Home		
4		AM PM	_____ Telephone _____ Home		
5		AM PM	_____ Telephone _____ Home		
6		AM PM	_____ Telephone _____ Home		
7		AM PM	_____ Telephone _____ Home		
8		AM PM	_____ Telephone _____ Home		
9		AM PM	_____ Telephone _____ Home		
10		AM PM	_____ Telephone _____ Home		
11		AM PM	_____ Telephone _____ Home		
12		AM PM	_____ Telephone _____ Home		
13		AM PM	_____ Telephone _____ Home		
14		AM PM	_____ Telephone _____ Home		
15		AM PM	_____ Telephone _____ Home		

*Use the following codes for the result of each attempted contact:

1. No one at home at address or telephone number contacted.
2. Made contact but respondent is not known/does not live there; no further information available.
3. Respondent has moved to new address and/or telephone number. [OBTAIN NEW ADDRESS OR TELEPHONE NUMBER]
4. Respondent not at home but lives at address or telephone number contacted.
5. Appointment made to interview respondent.
6. Respondent refused interview.
7. Respondent terminated interview before completion.
8. Completed interview with respondent.
9. Other result; please specify _____

_____

INTERVIEW INTRODUCTION

Hello, Mr./Ms. _____. My name is _____. I'm with CSR, Incorporated, a national research firm. Our company is under contract with the U.S. Department of Labor to conduct a study of the experiences of different individuals in making the transition from school to work. We are interested in your experiences and opinions about high school, your past and present employment, and other factors which will help us to complete this important study.

The information that you provide will be held in confidence by CSR, Incorporated. This means that CSR, Incorporated will not reveal your individual identity as the source of the information you provide without your prior written consent, except as required by law. This confidentiality of your individual identity is protected under the provisions of the Privacy Act of 1974. This study is authorized and funded under the provisions of the Comprehensive Employment and Training Act of 1973, as amended in 1978.

Results of the study will be useful to the U.S. Department of Labor in making decisions about policy and programs related to school to work transitions and youth employment. Consequently, your voluntary cooperation in completing this interview will be greatly appreciated.

IF THE TIME IS INCONVENIENT, MAKE AN APPOINTMENT FOR A TIME WHEN THE RESPONDENT CAN COMPLETE THE INTERVIEW.

This study is authorized by the
Comprehensive Employment and
Training Act, as amended, PL 95-524

SECTION I. EDUCATIONAL EXPERIENCES

I would like to start by asking you some questions about your experiences in high school.

1. What was the name of the high school that you last attended?

_____

_____

[TO BE CLASSIFIED BY LOCAL SITE SUPERVISOR]

Academic high school	1
Comprehensive high school	2
Vocational/technical high school ...	3
Academic high school coupled with vocational/technical center	4

2. Was this a public high school?

Yes	1
No	0

3. Which one of the following categories best describes your program of instruction in high school? [READ CATEGORIES TO RESPONDENT]

Academic/College Preparatory [SKIP TO Q. 5]	1
Commercial/Business	2
Vocational/Technical	3
General [SKIP TO Q. 5]	4
Other (Specify) _____ ...	5

4. What was your vocational program of instruction? [READ CATEGORIES TO RESPONDENT]

Agriculture	1
Business and Office	2
Distributive Education (for example, sales, merchandising, retailing)	3
Health	4
Home Economics or Family Life	5
Technical (for example drafting or electronics)	6
Trade and Industrial (for example, auto mechanics, metal working, wood working or printing)	7
Other (Specify) _____	8

5. For what specific occupation did you feel that your courses were preparing you?

_____

_____

6. Was this occupation your specific career objective at that time?

Yes	1
No	0

7. What three courses in high school do you feel have been the most beneficial to you in making the transition from school to work?

(1) _____

_____

(2) _____

_____

(3) _____

8. During your senior year of high school, did you participate in a cooperative education program, that is, were you released early from school so that you could be employed while receiving special assistance from a teacher or coordinator?

Yes 1
No 0

9. Did you graduate from high school?

Yes 1
No [SKIP TO Q. 11] 0

10. What was the month and year of your graduation?

Month _____ Year _____ [SKIP TO Q. 13]

11. What was the last grade level that you completed?

10th grade 1
11th grade 2

12. What would you say was the major reason that you dropped out of school?

_____

13. What was your overall grade average in high school? [READ CATEGORIES TO RESPONDENT]

A or A+ 8
A- 7
B+ 6
B 5
B- 4
C+ 3
C 2
D or below 1

14. Did you receive any assistance from people working in your high school in the area of careers, preparation for work or jobs?

Yes 1
No 0

15. At any time was information provided on career opportunities in apprenticeship?

Yes 1
No 0

16. During your last two years of high school, how certain were you of your career choice? [READ CATEGORIES TO RESPONDENT]

Very certain 4
Somewhat certain 3
Somewhat uncertain 2
Very uncertain 1

17. What specific plans did you have at the time you left high school?

No particular plans/continue working at a job held durng high school 1

Look for a job 2

Enter a training program 3

Go to school full-time 4

Enter the armed forces 5

Combine school and work in some way 6

Other (Specify) _____ ... 7

18. To what extent have your career goals changed since high school? [READ CATEGORIES TO RESPONDENT]

To a great extent 5
To a moderate extent 4
To some extent 3
Very little 2
Not at all 1

19. Now I would like to ask you to rate each of the following aspects of high school according to the quality of services and/or instruction that you received. [GIVE RESPONSE CARD TO RESPONDENT]

	Poor	Fair	Good	Excel-lent
(1) Information on occupations ...	1	2	3	4
(2) Assistance with career planning	1	2	3	4
(3) Instruction on how to look for a job	1	2	3	4

[FOR COMPARISON RESPONDENTS, SKIP SECTION II, GO TO SECTION III --EMPLOYMENT EXPERIENCES, STARTING WITH Q. 55]

SECTION II. APPRENTICESHIP EXPERIENCES

Records maintained by the local Youth Apprenticeship Project indicate that you participated in the project and that you accepted a position as a starting apprentice at some point in time in your last two years of high school. I'd like to ask you some questions about your experiences in that project.

20. Were you, in fact, employed as an apprentice while still enrolled in high school?

Yes 1
No [SKIP TO Q. 55] 0

21. How did you first hear about the Youth Apprenticeship Project?

Guidance counselor 1
Instructor 2
Staff member of Youth Apprenticeship Project 3
Cooperative education coordinator 4
Friend/classmate 5
Newspaper/radio/TV 6
Poster/bulletin board/circular 7
Other (Specify) _____ .. 8

22. What were your reasons for becoming an apprentice?

(1) _____

_____

(2) _____

_____

(3) _____

_____

23. What was the most important reason? [CIRCLE APPROPRIATE RESPONSE NUMBER ABOVE]

24. Before you were employed as an apprentice, how well informed do you think you were about each of the following: [READ CATEGORIES TO RESPONDENT]

	Not Informed	Somewhat Informed	Well Informed
(1) Nature of the work, e.g., types of tasks required	1	2	3
(2) Rate of pay	1	2	3
(3) Long-term future of the job	1	2	3
(4) Length of the apprenticeship	1	2	3
(5) Related instruction requirements	1	2	3

25. In what occupation were you employed as an apprentice?

_____

26. What is the length of the apprenticeship in this occupation?

_____ years

27. What was your hourly wage when you first began your apprenticeship?

$ _____ per hour

28. Who provided you with the most assistance in obtaining employment in this occupation?

Cooperative education coordinator 1
Guidance counselor 2
Vocational instructor 3
Staff member of the Youth Apprenticeship Project 4
Received no significant assistance/obtained employment on my own 5
Other (Specify) _____ . 6

29. Were there other student apprentices employed at your work site during the same time you were still in high school?

Yes 1
No 0

30. What was the reaction of your parents (guardians) to your decision to accept employment as an apprentice; that is, how strongly did they approve or disapprove of your decision? [READ CATEGORIES TO RESPONDENT]

Strongly approved 5
Somewhat approved 4
Didn't approve/disapprove 3
Somewhat disapproved 2
Strongly disapproved 1

31. Did a union represent the workers at the company where you were employed as an apprentice?

Yes 1
No 0

32. For how long were you employed as an apprentice during high school?

_____ weeks

33. When school was in session, on the average, how many hours did you work per week?

_____ hours per week

34. During the summer before your senior year, were you employed as an apprentice?

Yes 1
No 0

35. While you were still in high school, what do you estimate was the total amount of money that you earned as an apprentice before deductions?

$ _____ total earnings

36. While you were a student apprentice, did you discuss problems you were having on the job with teachers, counselors or other members of the staff at your high school?

Yes 1
No [SKIP TO Q. 39] 0

37. What types of problems did you discuss with staff members at your high school? [READ CATEGORIES TO RESPONDENT]

Skill-related problems
(for example, difficulty
in performing the tasks
required) 1

Work adjustment problems
(for example, difficulty
in relationships with
supervisors or co-workers) 2

Both skill-related and
work adjustment problems 3

Other problems (Specify)_____
_____ 4

38. Were the staff members in your high school usually helpful in resolving these work problems?

Yes 1
No 0

39. Are you still employed in the job you had as a student apprentice?

Yes [SKIP TO Q. 45] 1
No 0

40. Did you resign voluntarily, were you fired, or were you laid off for lack of work?

Resigned 1
Fired [SKIP TO Q. 43] 2
Laid off [SKIP TO Q. 43] 3
Other (Specify) _____
_____ . 4

41. For what reasons did you leave your apprenticeship position?

(1) _____

_____

(2) _____

_____

(3) _____

_____

42. What was the most important reason? [CIRCLE APPROPRIATE RESPONSE NUMBER ABOVE]

43. For the following, I would like you to indicate your level of satisfaction with each of the following aspects of your apprenticeship experience. [SHOW RESPONSE CARD TO RESPONDENT]

		Very Dis-Satisfied	Dissat-isfied	Satis-fied	Very Satisfied
(1)	Rate of pay	1	2	3	4
(2)	Opportunity for advancement	1	2	3	4
(3)	Supervision	1	2	3	4
(4)	Recognition for doing a good job	1	2	3	4
(5)	On the job in-struction	1	2	3	4
(6)	Sense of accomplish-ment in the job	1	2	3	4

44. Did you leave your apprenticeship before or after you graduated from high school?

Before [SKIP TO Q. 46] 1
After 2

45. After you were graduated from high school, did you regularly attend classes or receive some other form of instruction (for example, a correspondence course) in conjunction with your apprenticeship?

Yes 1
No 0

46. Did anyone from the school or from the organization sponsoring the Youth Apprenticeship Project visit you at your worksite after you began working as an apprentice?

Yes 1
No [SKIP TO Q. 48] 0

47. Who visited you at the work site while you were a student apprentice? [READ CATEGORIES TO RESPONDENT]

Someone from the school 1
Someone from the sponsoring organization..... 2
People from both the school and the sponsoring organization 3

48. What would you say was the <u>most</u> <u>important</u> benefit or advantage of being a student apprentice?

_____

49. What would you say was the <u>most</u> <u>important</u> problem or disadvantage of being a student apprentice?

_____

50. Would you recommend apprenticeship to a friend?

Yes 1
No 0

51. As a result of your apprenticeship experience during high school did you change your career plans in anyway?

Yes 1
No [SKIP TO Q. 53] 0

52. In what ways did you change your career plans as a result of your apprenticeship experience?

(1) _____

_____

(2) _____

_____

(3) _____

_____

53. One of the objectives of the Youth Apprenticeship Project has been to help students to make the transition from school to work. How successful do you think the project has been in accomplishing this goal? [READ CATEGORIES TO RESPONDENT]

Very successful	4
Somewhat successful	3
Not very successful	2
Very unsuccessful (a failure)	1

54. Not counting your employment as an apprentice did you have any other paid employment during high school? Do not include "occasional work" such as mowing lawns, babysitting, or raking leaves. Do incude any "regular jobs" such as delivering newspapers, working in a restaurant, or working at a gas station.

Yes [SKIP TO Q. 56]	1
No [SKIP TO Q. 57]	0

SECTION III. EMPLOYMENT EXPERIENCES

55. Did you have any paid employment during high school? Do not include "occasional work" such as mowing lawns, babysitting, or raking leaves. Do include any "regular jobs" such as delivering newspapers, working in a restaurant or working in a gas station.

Yes 1
No [SKIP TO Q. 57] 0

56. How many different regular jobs did you have during the time you were in high school?

_____ jobs

57. At the present time, would you say that your primary occupation or activity consists of being a student? For example, are you currently enrolled in an educational program on a full-time basis?

Yes 1
No [SKIP TO Q. 59] 0

58. What type of degree do you finally hope to obtain upon completion of all your studies?

Associate degree [SKIP TO Q. 72] 1
Bachelor's degree [SKIP TO Q. 72] ... 2
Post-graduate or professional degree [SKIP TO Q. 72] 3
Some other degree (Specify) _____ [SKIP TO Q. 72 ... 4
No degree sought [SKIP TO Q. 72] 5

59. Are you currently employed?

Yes [SKIP to Q. 61] 1
No 0

60. Have you been employed at any time since high school?

Yes 1
No [SKIP TO Q. 78] 0

[QUESTIONS 61 THROUGH 75 REFER TO THE CURRENT JOB FOR EMPLOYED RESPONDENTS, OR THE MOST RECENT JOB FOR UNEMPLOYED RESPONDENTS]

61. What is your current (most recent) occupation?

_____

62. Please describe in two or three sentences what you do (did) in this occupation.

_____

_____

_____

63. How many weeks have you held (did you hold) your current (most recent) job?

_____ weeks

64. Are (were) you paid based upon a fixed hourly wage, or weekly or monthly salary, or are (were) you paid on some other basis?

Hourly wage 1
Weekly or monthly salary
[SKIP TO Q. 67] 2
Other basis of pay [SKIP TO
Q. 69] 3

65. What is (was) your current hourly wage?

$_____ per hour

66. What was your starting hourly wage with this employer?

$_____ per hour [SKIP TO Q. 71]

67. What is (was) your current weekly or monthly salary before deductions?

$_____ per week

$_____ per month

68. What was your starting weekly or monthly salary with this employer before deductions?

$_____ per week [SKIP TO Q. 71]

$_____ per month [SKIP TO Q. 71]

69. Please explain in detail the method by which your pay is (was) calculated.

_____

_____

_____

_____

70. Please estimate for me your average weekly or monthly earnings from the job before deductions.

$_____ per week

$_____ per month

71. On the average, how many hours per week do (did) you work on this job?

_____ hours per week

72. In addition to your current (most recent) primary occupation which you have just described, do (did) you currently (concurrently) engage in any other work activities?

Yes 1
No [SKIP TO Q. 75] 0

73. Please describe your other work activities.

_____

_____

74. Please estimate your average weekly or monthly earnings from those other work activities before deductions.

$_____ per week

$_____ per month

75. For the following, I would like you to indicate your level of satisfaction with each of the following aspects of your current (most recent) job. [SHOW RESPONSE CARD TO RESPONDENT]

	Very Dis-Satisfied	Dissat-isfied	Satis-fied	Very Satisfied
(1) Rate of pay	1	2	3	4
(2) Opportunity for advancement	1	2	3	4
(3) Supervision	1	2	3	4
(4) Recognition for doing a good job	1	2	3	4
(5) On the job in-struction	1	2	3	4
(6) Sense of accomplish-ment in the job	1	2	3	4

76. Excluding your current (most recent) job, have you had any other jobs since high school?

Yes 1
No [SKIP TO Q. 78] 0

77. How many other regular jobs have you held since high school?

_____ jobs

78. Based upon your experiences since high school, what do you think are the major problems you faced in making the change from being a student to being a worker?

(1) _____

_____

(2) _____

_____

(3) _____

_____

79. What do you think is the most important problem that you faced in making the change from being a student to being a worker? [CIRCLE APPROPRIATE RESPONSE NUMBER ABOVE]

80. As a result of your work-related experiences since high school, have you changed your career plans in any way?

Yes	1
No [SKIP TO Q. 82]	0

81. In what ways have you changed your career plans as a result of your work-related experiences since high school?

(1) _____

_____

(2) _____

_____

(3) _____

_____

SECTION IV. DEMOGRAPHIC/FAMILY BACKGROUND

In this last section of the interview, I would like to ask some questions about you and your family background.

82. Sex of the respondent. [INTERVIEWER OBSERVATION]

Male 1
Female 0

83. What is your year of birth?

_____ year

84. What is your racial/ethnic background? [READ CATEGORIES TO RESPONDENT]

American Indian or Alaskan Native ... 1
Asian or Pacific Islander 2
Black, not of Hispanic origin 3
Hispanic 4
White, not of Hispanic origin 5

85. What was the total income of both of your parents during your last year in high school? [IF NECESSARY, REMIND RESPONDENT OF OF THE CONFIDENTIALITY OF HIS/HER RESPONSE]

$_____ parents' total yearly income

Don't know 8

86. How many members were there in your family (either living at home or in-school full-time) during your last year of high school, including yourself?

_____ family members

87. What was your county of residence during your last year of high school?

_____ county

88. If we were to follow-up on your employment status one year from now, what two people would know your address at that time?

(1) Name _____

Address _____
(No.) (Street) (Apt. No.)

_____
(City) (State) (Zip)

Telephone (___) _____
(Area)

(2) Name _____

Address _____
(No.) (Street) (Apt. No.)

_____
(City) (State) (Zip)

Telephone (___) _____
(Area)

Thank you very much for your cooperation with our study.

APPENDIX B:

EMPLOYER/SUPERVISOR INTERVIEW SCHEDULE

OMB# 44-S-80004
Expires January 1981

CSR, Incorporated
805 15th Street, N.W., Suite 500
Washington, D.C. 20005
(202) 842-7600

EMPLOYER/SUPERVISOR INTERVIEW SCHEDULE

INSTRUCTIONS

This interview schedule consists of two sections:

- Section I is addressed to the employer, that is, the person who made the decision that the company would participate in the Youth Apprenticeship Project. Usually, this person will have signed for the company on the apprenticeship standards which were submitted for registration. Frequently, this person also will have signed for the company on the individual apprenticeship agreements which were submitted for registration.

- Section II is to be completed by the supervisor of the apprentice(s), that is, the person directly responsible for monitoring and evaluating the job performance of the student apprentice(s).

At many smaller companies, both sections will be completed by the same person. At some larger companies, the two sections will be completed by two different respondents. In isolated instances, there may be one respondent for Section I and more than one respondent for Section II.

CSR, INCORPORATED

EMPLOYER/SUPERVISOR
INTERVIEW SCHEDULE

FOR OFFICE USE ONLY

Sample Site No. _____

ID No. _____

Log Date _____ By _____

Edit Date _____ By _____

Code Date _____ By _____

Name of Company [PRINT] _____

Company Address [PRINT] _____
(No.) (Street)

_____
(City) (State) (Zip)

Telephone Number ( ) _____
(Area)

Name of Employer (PRINT) _____
(Last) (First) (MI)

	Employer	Supervisor
Location of Interview		
Date of Interview		
Time Started	AM / PM	AM / PM
Time Completed	AM / PM	AM / PM
Interviewer		

VERIFICATION

Date _____ Time _____ AM / PM

Verification for 1. Employer 2. Supervisor

Provided by 1. Respondent 2. Other (Specify) _____

Verified by _____

Comments _____

INTERVIEW INTRODUCTION

Hello, Mr./Ms. _____. My name is _____. I'm with CSR, Incorporated, a national research firm. Our company is under contract with the U.S. Department of Labor to conduct a study of the impacts of a local Youth Apprenticeship Project. We are interested in your views concerning your company's experiences with this project and concerning the apprentice(s) who have worked for your firm as a result of the project.

The information that you provide will be held in confidence by CSR, Incorporated. This means that CSR, Incorporated will not reveal your individual identity as the source of the information you provide without your prior written consent, except as required by law. This confidentiality of your individual identity is protected under the provisions of the Privacy Act of 1974. This study is authorized and funded under the provisions of the Comprehensive Employment and Training Act of 1973, as amended in 1978.

Results of the study will be useful to the U.S. Department of Labor in making decisions about policy and programs related to school to work transitions and youth employment. Consequently, your voluntary cooperation in completing this interview will be greatly appreciated.

IF TIME IS INCONVENIENT, MAKE AN APPOINTMENT FOR A TIME WHEN THE RESPONDENT CAN COMPLETE THE INTERVIEW.

This study is authorized by the
Comprehensive Employment and
Training Act, as amended, P.L. 95-524

SECTION I. EMPLOYER INTERVIEW

I would like to start by asking you some questions about how and why you got involved with the Youth Apprenticeship Project.

1. How did you first hear about the Youth Apprenticeship Project?

Project director	1
Project staff member	2
Teacher, counselor or coordinator from a high school	3
Student working with the company	4
Another employer	5
Organization of which a member	6
Newspaper/radio/TV	7
Other (Specify) _____	8

2. What specific aspects of the project interested you most as an employer?

(1) _____

_____

(2) _____

_____

(3) _____

_____

3. Of those aspects you have mentioned, which one was the most important in your decision to participate in the project? [CIRCLE THE APPROPRIATE RESPONSE NUMBER ABOVE]

4. Would you have participated in the program had stipends not been available?

Yes	1
No	0

5. In general, then, how important was the availability of stipends in your decision to participate in the program? [READ CATEGORIES TO RESPONDENT]

Very important	4
Somewhat important	3
Not very important	2
Not important at all	1

6. Did you have any initial reservations about participating in the project?

Yes	1
No [SKIP TO Q. 8]	0

7. What were your initial reservations?

(1) _____

_____

(2) _____

_____

(3) _____

_____

8. Were you already aware of apprenticeship as a formal system of training?

Yes	1
No [SKIP TO Q. 10]	0

9. What was your source of knowledge about apprenticeship?

Typical form of training in my business	1
Was a former apprentice myself	2
Company already had an apprenticeship program	3
Had been approached previously about registering an apprenticeship program	4
Other (Specify) _____	
_____	
_____	5

10. Were you made aware from the outset that employers were expected to retain the apprentices after graduation?

Yes [SKIP TO Q. 12] 1
No 0

11. When were you made aware of this feature of the project?

_____

12. Were you also made aware from the outset that stipends for the student apprentices would cease at graduation?

Yes [SKIP TO Q. 14] 1
No 0

13. When were you made aware of this fact?

_____

14. Have you requested stipends in the total amount due you?

Yes [SKIP TO Q. 16] 1
No 0

15. What have been the circumstances in which you have not requested the full amount of the stipends?

(1) _____

_____

(2) _____

_____

(3) _____

_____

16. Are you aware of the Targeted Jobs Tax Credit which is available to employers who hire cooperative education students and members of other specific target groups?

Yes 1
No [SKIP TO Q. 18] 0

17. Have you taken advantage of this tax incentive or do you plan to take advantage of it based upon your employment of student apprentices?

Yes 1
No 0

18. In general, do you think some form of financial incentive, such as a direct subsidy or a tax credit, is necessary to motivate employers to hire student apprentices?

Yes 1
No 0

19. Would you briefly describe the kind of business in which your company is engaged?

_____

_____

20. Prior to your company's participation in the Youth Apprenticeship Project, did your company use registered apprenticeship to provide training in any occupations?

Yes 1
No 0

21. When you registered your apprenticeship program(s) under the Youth Apprenticeship Project, did you have to modify the work processes to fit the circumstances of your firm?

Yes 1
No [SKIP TO Q.23] 0

22. In what ways did you modify the work processes?

(1) _____

_____

(2) _____

_____

(3) _____

_____

23. How many registered apprenticeship programs do you now have in your company; that is, for how many different occupations do you currently use apprenticeship as a system of training?

_____ occupations

24. How many employees do you have in your firm?

_____ employees

25. Are your employees represented by a union?

Yes 1
No 0

26. What is the total number of student apprentices that you have hired through the Youth Apprenticeship Project?

_____ student apprentices

27. Do you currently have employed under the Youth Apprenticeship Project any student apprentices who still are in high school?

Yes 1
No [SKIP TO Q.29] 0

28. How many Youth Apprenticeship Project student apprentices who are still in high school are currently in your employ?

_____ student apprentices

29. Do you currently have employed any former student apprentices, originally hired under the Youth Apprenticeship Project, who have graduated from high school?

Yes 1
No [SKIP TO Q. 32] 0

30. How many graduate Youth Apprenticeship Project student apprentices are currently in your employ?

_____ apprentices

31. Are there any arrangments for those apprentices who have graduated from high school to receive some form of related instruction as part of the continuation of their apprenticeship?

Yes 1
No 0

32. Disregarding for the moment certain specific features of the Youth Apprenticeship Project such as provision of subsidies and employment of in-school youth, how satisfied are you with registered apprenticeship as a general system of training? [READ CATEGORIES TO RESPONDENT]

Very satisfied 4
Somewhat satisfied 3
Somewhat dissatisfied 2
Very dissatisfied 1

33. Do you currently regard registered apprenticeship as a permanent and significant component of your company's approach to training?

Yes	1
No	0

34. Since you began participating in the Youth Apprenticeship Project, have you ever been contacted by a representative from the Bureau of Apprenticeship and Training of the U. S. Department of Labor?

Yes	1
No [SKIP TO Q. 36]	0

35. How helpful was this person in matters relating to your apprenticeship program? [READ CATEGORIES TO RESPONDENT]

Very helpful	4
Somewhat helpful	3
Not very helpful	2
Not helpful at all	1

36. One of the objectives of the Youth Apprenticeship Project has been to help students to make the transition from school to work. How successful do you think the project has been in accomplishing this goal? [READ CATEGORIES TO RESPONDENT]

Very successful	4
Somewhat successful	3
Not very successful	2
Very unsuccessful (a failure).....	1

37. What do you think are the major problems which students face in making the transition from school to work?

(1) _____

_____

(2) _____

_____

(3) _____

_____

38. Which one would you say is the <u>most</u> <u>important</u> problem that students face in making the school-to-work transition? [CIRCLE THE APPROPRIATE RESPONSE NUMBER ABOVE]

39. Looking back over all your experiences with the Youth Apprenticeship Project, what would you say has been the best single feature of this project from your standpoint as an employer?

_____

_____

_____

40. What would you say has been the worst single feature of this project from your standpoint as an employer?

_____

_____

_____

41. As a taxpayer, would you favor or oppose continued expenditures of Federal funds by the Department of Labor for Youth Apprenticeship Projects such as the one with which you cooperated?

Favor	2
Oppose	1

42. All things considered, how satisfied have you been overall with the Youth Apprenticeship Project? [READ CATEGORIES TO RESPONDENT]

Very satisfied	4
Somewhat satisfied	3
Somewhat dissatisfied	2
Very dissatisfied	1

43. As a result of your participation in the project, have you recommended the Youth Apprenticeship Project to other employers?

Yes	1
No	0

44. Compared to other young people who have worked for this company, do you think student apprentices generally are better than most others, about the same as, or worse than most others?

Better than most	3
About the same as most	2
Worse than most	1

Now, if you don't mind, I'd like to ask you one other question about yourself.

45. To which one of the following racial or ethnic groups would you say that you belong? [READ CATEGORIES TO RESPONDENT]

American Indian or Alaskan Native ..	1
Asian or Pacific Islander	2
Black, not of Hispanic origin	3
Hispanic	4
White, not of Hispanic origin	5

46. Sex of respondent [INTERVIEWER OBSERVATION]

Male	1
Female	0

47. Records maintained by the local Youth Apprenticeship Project indicate that the following apprentice(s) has (have) been employed by your organization. Would you please tell me who has had direct responsibility for supervising the performance of this (these) apprentice(s)?

NAME(S) OF APPRENTICE(S) [TO BE COMPLETED PRIOR TO INTERVIEW]	NAME(S) OF SUPERVISOR(S) [TO BE COMPLETED DURING INTERVIEW]
(1) _____	(1) _____
(2) _____	(2) _____
(3) _____	(3) _____

[IF THE EMPLOYER HAS HAD DIRECT RESPONSIBILITY FOR SUPERVISING THE APPRENTICE(S), PRINT "EMPLOYER" WHERE THE SUPERVISOR"S NAME IS REQUESTED AND SKIP TO Q. 48 IN THE SUPERVISOR INTERVIEW SECTION. IF SOMEONE OTHER THAN THE EMPLOYER HAS HAD DIRECT SUPERVISORY RESPONSIBILITY, ASK THE EMPLOYER'S PERMISSION TO CONDUCT A BRIEF INTERVIEW WITH EACH SUPERVISOR AND ARRANGE A TIME FOR THE INTERVIEW(S) THAT IS ACCEPTABLE TO THE EMPLOYER.]

INTERVIEW INTRODUCTION [IF APPROPRIATE]

Hello, Mr./Ms. _____. My name is _____. I'm with CSR, Incorporated, a national research firm. Our company is under contract with the U.S. Department of Labor to conduct a study of the impacts of a local Youth Apprenticeship Project. We are interested in your views about this project and the student apprentice(s) you have supervised.

The information that you provide will be held in confidence by CSR, Incorporated. This means that CSR, Incorporated will not reveal your individual identity as the source of the information you provide without your prior written consent, except as required by law. This confidentiality of your individual identity is protected under the provisions of the Privacy Act of 1974. This study is authorized and funded under the provisions of the Comprehensive Employment and Training Act of 1973, as amended in 1978.

Results of the study will be useful to the U.S. Department of Labor in making decisions about policy and programs related to school to work transitions and youth employment. Consequently, your voluntary cooperation in completing this interview will be greatly appreciated.

IF TIME IS INCONVENIENT, MAKE AN APPOINTMENT FOR A TIME WHEN THE RESPONDENT CAN COMPLETE THE INTERVIEW

This study is authorized by the
Comprehensive Employment and
Training Act, as amended, P.L. 95-524

SECTION II. SUPERVISOR INTERVIEW

[QUESTIONS 48, 49, AND 50 REQUEST WORK PERFORMANCE EVALUATIONS FOR THE APPRENTICE(S) IDENTIFIED IN QUESTION 47. IF THERE IS MORE THAN ONE SUPERVISOR, COMPLETE THE WORK PERFORMANCE EVALUATION QUESTION WITH EACH SUPERVISOR AND COMPLETE QUESTIONS 51 THROUGH 57 ONLY WITH THE LAST SUPERVISOR INTERVIEWED.]

48. (1) How would you rate the job performance of [PRINT THE APPRENTICE NAME FROM Q. 47 (1)] _____ on each of the following attributes? [GIVE RESPONSE CARD TO RESPONDENT]

		Poor	Fair	Good	Excellent
(A)	Work attitudes	1	2	3	4
(B)	Skill level	1	2	3	4
(C)	Ability to learn	1	2	3	4
(D)	Cooperation	1	2	3	4
(E)	Punctuality	1	2	3	4
(F)	Following instructions	1	2	3	4
(G)	Relationships with co-workers	1	2	3	4
(H)	Self-initiative	1	2	3	4
(I)	Pride in work	1	2	3	4
(J)	Overall performance	1	2	3	4

(2) What is the trade of this apprentice?

_____

(3) What is the apprentice's current status? [READ CATEGORIES TO RESPONDENT]

Still employed at the company . 3
Voluntary termination 2
Involuntary termination 1

(4) What was the major reason for the termination? [IF APPROPRIATE]

_____

Don't know 8

[IF ONLY ONE APPRENTICE, SKIP TO Q. 51]

49. (1) How would you rate the job performance of [PRINT APPRENTICE NAME FROM Q. 47 (2)] _____ on each of the following attributes? [GIVE RESPONSE CARD TO RESPONDENT]

		Poor	Fair	Good	Excellent
(A)	Work attitudes	1	2	3	4
(B)	Skill level	1	2	3	4
(C)	Ability to learn	1	2	3	4
(D)	Cooperation	1	2	3	4
(E)	Punctuality	1	2	3	4
(F)	Following instructions	1	2	3	4
(G)	Relationships with co-workers	1	2	3	4
(H)	Self-initiative	1	2	3	4
(I)	Pride in work	1	2	3	4
(J)	Overall performance	1	2	3	4

(2) What is the trade of this apprentice?

_____

(3) What is the apprentice's current status [READ CATEGORIES TO RESPONDENT]

Still with the company 3
Voluntary termination 2
Involuntary termination 1

(4) What was the major reason for the termination? [IF APPROPRIATE]

_____

Don't know 8

[IF ONLY TWO APPRENTICES, SKIP TO Q. 51]

50. (1) How would you rate the job performance of (PRINT APPRENTICE NAME FROM Q. 47 (3)] _____ on each of the following attributes? (GIVE RESPONSE CARD TO RESPONDENT]

		Poor	Fair	Good	Excel-lent
(A)	Work attitudes	1	2	3	4
(B)	Skill level	1	2	3	4
(C)	Ability to learn	1	2	3	4
(D)	Cooperation	1	2	3	4
(E)	Punctuality	1	2	3	4
(F)	Following instructions..	1	2	3	4
(G)	Relationships with co-workers	1	2	3	4
(H)	Self-initiative	1	2	3	4
(I)	Pride in work	1	2	3	4
(J)	Overall performance	1	2	3	4

(2) What is the trade of this apprentice?

_____

(3) What is the apprentice's current status? [READ CATEGORIES TO RESPONDENT]

Still with the company 3
Voluntary termination 2
Involuntary termination 1

(4) What was the major reason for the termination? [IF APPROPRIATE]

_____

Don't know 8

[IF THE EMPLOYER ALSO IS THE RESPONDENT FOR THE SUPERVISOR SECTION, DO NOT ASK Q. 51-57. IF THE RESPONDENT FOR THE SUPERVISOR SECTION IS SOMEONE OTHER THAN THE EMPLOYER, CONTINUE WITH Q. 51-57. IF THERE IS MORE THAN ONE RESPONDENT FOR THE SUPERVISOR SECTION, COMPLETE Q. 51-57 ONLY WITH THE LAST SUPERVISOR INTERVIEWED.]

51. Compared to other young people whom you have supervised while working for this company, do you think the student apprentices are generally better than others, about the same as, or worse than most others?

Better than most	3
About the same as most	2
Worse than most	1

52. One of the objectives of the Youth Apprenticeship Project has been to help students to make the transition from school to work. How successful do you think the project has been in accomplishing this goal? [READ CATEGORIES TO RESPONDENT]

Very successful	4
Somewhat successful	3
Not very successful	2
Very unsuccessful (a failure)	1

53. As a taxpayer, would you favor or oppose continued expenditures of Federal funds by the Department of Labor for Youth Apprenticeship Projects such as the one in which the high school students participated?

Favor	2
Oppose	1

54. What do you think are the major problems that students face in making the transition from school to work?

(1) _____

_____

(2) _____

_____

(3) _____

_____

55. Which one would you say is the most important problem that students face in making the school-to-work transition? [CIRCLE APPROPRIATE RESPONSE NUMBER ABOVE]

Now, if you don't mind, I'd like to ask you one question about yourself.

56. To which one of the following racial or ethnic groups would you say that you belong? [READ CATEGORIES TO RESPONDENT]

American Indian or Alaskan Native 1
Asian or Pacific Islander 2
Black, not of Hispanic origin 3
Hispanic 4
White, not of Hispanic origin 5

57. Sex of respondent [INTERVIEWER OBSERVATION]

Male 1
Female 0

Thank you very much for your cooperation with our study.